Initial Study for the FNC Farming Residential Project

August 2024



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City of Tulare
411 East Kern Ave
Tulare, CA 93274

Initial Study

Project Title: FNC Farming Annexation Project

This document is the Initial Study for the proposed construction and operation of 556-units of low-density residential development, a community park, and a 7.8-acre rural residential remainder parcel on approximately 140.32 gross acres of land within the unincorporated area of the County of Tulare. The Project will also include the annexation of the subject property into the City limits of the City of Tulare, A General Plan Amendment, pre-zoning of the property and a subdivision map. The City of Tulare will act as Lead Agency for this Project pursuant to the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

PURPOSE

The purpose of this environmental document is to implement the California Environmental Quality Act (CEQA). Section 15002(a) of the CEQA Guidelines describes the basic purposes of CEQA as follows.

(1) Inform governmental decision-makers and the public about the potential significant environmental effects of proposed activities.
(2) Identify the ways that environmental damage can be avoided or significantly reduced.
(3) Prevent significant, avoidable damage to the environment by requiring changes in Projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
(4) Disclose to the public the reasons why a governmental agency approved the Project in the manner the agency chose if significant environmental effects are involved.

This Initial Study of environmental impacts has been prepared to conform to the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). According to Section 15063, a public agency must prepare an EIR, use a previously prepared EIR or utilize another tiering process to appropriately address all significant environmental effects resulting from the proposed Project.

(1) If the agency determines that there is substantial evidence that any aspect of the Project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the Project is adverse or beneficial, the lead agency shall do one of the following:

a. *Prepare an EIR or*
b. *Use a previously prepared EIR which the lead agency determines would adequately analyze the Project at hand, or*
c. *Determine, pursuant to a program EIR, tiering, or another appropriate process, which of a Project's effects were adequately examined by an earlier EIR or negative declaration. Another appropriate process may include, for example, a master EIR, a master environmental assessment, approval of housing and neighborhood commercial facilities in urban areas, approval of residential Projects pursuant to a specific plan as described in section 15182, approval of residential Projects consistent with a community plan, general plan or zoning as described in section 15183, or an environmental document prepared under a State certified regulatory program. The lead agency shall then ascertain which effects, if any, should be analyzed in a later EIR or negative declaration.*

INITIAL STUDY

1. **Project Title:** FNC Farming Subdivision

2. **Lead Agency:** City of Tulare, Planning Department
Contact Person: Steven Sopp, Principal Planner
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Tulare, CA 93274
Phone Number: (559) 684-4216

3. **Applicant:** San Joaquin Valley Homes
5607 Avenida de los Robles
Visalia, CA 93291
Phone Number: (559) 732-2660

4. **Project Location:** The proposed Project site is located on the Southeast corner of Prosperity Avenue and Morrison Street within the City of Tulare Urban Development Boundary and Spere of Influence and the unincorporated area of Tulare County. The site is West of Road 126, East of Morrison Street, and South of Prosperity Avenue. The site is approximately 2.87 miles Northeast of the Tulare downtown. The Project involves construction on approximately 140.32 gross acres on APNs 172-010-021, 184-020-010, and 172-010-022. The site is topographically flat and is bounded by agricultural uses to the South and East, single-family housing to the North, and a single-family subdivision that is currently under construction to the West. The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

5. **General Plan Designation:** The proposed Project site is designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) by the City of Tulare General Plan. A General Plan Amendment is proposed to change the land use designation for the majority of the site to Low Density Residential with an approximately 7.8-acre portion remaining designated as Rural Residential.

6. **Zoning Designation:** The site is zoned Exclusive Agriculture, 20-Acres (AE-20) and Exclusive Agriculture, 40-Acres (AE-40) by Tulare County. However, the site is within the City's Urban Development Boundary and planned for annexation by the City of Tulare. The majority of the Project site is proposed to be pre-zoned to the R-1-5 (Single-family Residential, 5,000 sq. ft. minimum lot area) zoning designation with an approximately 7.8-acre portion being pre-zoned to the Rural Residential zoning designation. The pre-zone will become effective upon annexation into the Cit of Tulare.

Project Description: The Project proposes the construction of 556 single-family residential units and a 5.47-acre central park and pond on parcels 172-010-021, 172-010-022, and 184-020-010 as well as annexation of the 140.32-acre site into the City of Tulare. The Project also proposes the zoning of 7.8-acres of the site as Rural Residential, but the parcel will remain undeveloped at this time. The 140.32-acre Project site is currently under Tulare County jurisdiction but has been included in the City of Tulare's Sphere of Influence according to the 2035 City of Tulare General Plan. The County has zoned the site as Exclusive Agriculture 20-Acre and 40-Acre minimum (AE-20, AE-40), and the City of Tulare has designated the site as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre). The applicant is proposing to pre-zone the majority of the subject property to R-1-5 Single-Family Residential, 5,000 sq. ft. minimum lot area zoning designation with an approximately 7.8-acre remainder to be zoned Rural Residential. The proposed pre-zoning will become effective upon annexation of the Project site into the City of Tulare.

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, including the extension of North Oakmore Street. Morrison Street and Prosperity Avenue will be widened to their full planned right-of-way and curb, gutter, and sidewalk will be installed. The Project would require no demolition of any anchored structure, but there are approximately 33.9 acres of agricultural high tunnels that will be removed prior to construction. The construction of the Project will be in five phases.

Additionally, several roadway improvements to intersections surrounding the Project site may result which may include the installation of traffic signals, realignment or addition of traffic lanes, and/or addition of turn-lanes. Further analysis on potential traffic improvements and the potential impact of traffic delays is discussed in more detail in the Focused Environmental Impact Report (EIR) prepared for the proposed Project.

7. **Surrounding Land Uses and Settings:**

Properties to the north, south and east of the Project site are subject to the Tulare County General Plan and Zoning but are within the City's Urban Development Boundary. The property to the west is under Tulare County jurisdiction but is not within the City's Urban Development Boundary.

North: Rural Residential (City of Tulare General Plan) and Rural Residential (Tulare County Zoning Code) currently Single-Family Housing.
South: Rural Residential (City of Tulare General Plan) and Exclusive Agriculture, 20-Acre Minimum (Tulare County Zoning Code) currently under agricultural use.
East: Exclusive Agriculture 40-Acre Minimum (Tulare County Zoning Code) currently under agricultural use.
West: Low and Medium-Density Residential (City of Tulare General Plan) currently vacant.

8. **Required Approvals:** The following discretionary actions are required from the City of Tulare for the proposed Project:
    - Consideration and certification of EIR
    - Approval of City of Tulare General Plan Amendment
    - Approval of City of Tulare Pre-Zone Application
    - Approval of City of Tulare Annexation Application
    - Upon completion of the annexation of the Project site into City limits, a parcel map detailing site development per the approved land use and zoning designations would be submitted to the City of Tulare for review and approval prior to the start of construction.
    - Approval for water and sewer infrastructure
    - Approval for surrounding roadway and perimeter improvements such as sidewalks, curbs, gutters and a traffic signal
    - Tulare County Local Formation Commission (LAFCO) – Reorganization (Annexation) Application.
    - Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.

The following ministerial approvals are required from the City of Tulare for the proposed Project:

- City of Tulare Grading Permits
- City of Tulare Building and Encroachment Permits
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, 9510 and several others (see Air Quality section).

9. **Native American Consultation:** The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)). According to the most recent census data, California is home to 109 currently recognized Native American tribes. Tribes in California currently have nearly 100 separate reservations or Rancherias. Tulare County has several Rancherias. Through formal consultation letters, the City has

noticed the Santa Rosa Rancheria Tachi Yokut Tribe, Tule River Indian Tribe, and the Wuksachi Indian Tribe/Eshom Valley Band as part of AB 52 and SB 18. Under these California laws, each tribe is given a 90day response period in which they have the opportunity to review the letter and determine if they have additional concerns related to a project. No responses were received regarding the proposed Project.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

10. **Parking and access:** Vehicular access to the Project is available via Morrison Street and Prosperity Avenue. The Project includes new streets and courts that provide full access to the Project site. During construction, workers will utilize existing parking areas and/or temporary construction staging areas for parking vehicles and equipment. Additionally, temporary emergency access will be added during early construction.

11. **Landscaping and Design:** The landscape and design plans will be required during building permit and final map submittal for any areas maintained by a landscape and lighting district. All landscaping, including landscaping established for each single-family residential home will be required to be consistent with the WELO (Water Efficient Landscape Ordinance) Ordinance.

12. **Utilities and Electrical Services:** The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities. Water and sewer services will be provided by the City of Tulare once new lines are created on the Project site. Electricity will be provided by Southern California Edison (SCE). All stormwater produced from Project operations will be directed to the 5.47-acre joint use park and storm water retention pond planned for the site.

    The Project would include improvements to the surrounding streets. The Right of Way (ROW) of Oakmore Street will be built to a width of 128' and include new sidewalks, landscaping, and a Class I Bike Trail. The Project proposes improvements to Morrison Street to include sidewalks, Class I Bike Trail, landscaping, as well as roadway improvements. Castlerock Avenue, a new roadway, is proposed to have a ROW of 68', a Class I bike path, sidewalks, and landscaping. Castle Rock Avenue will connect the eastern and western portions of the residential development and is located in the central portion of the Project area. Another

new local roadway proposed as part of the Project is Monarch Dunes Avenue, which will have a ROW of 68' and include landscaping, sidewalks, and a Class I Bike Trail. All local roads in the Project area will include a 6.0' section for on-street parking.

Acronyms

BMP	Best Management Practices
BAU	Business as Usual
CAA	Clean Air Act
CBC	California Building Code
CCAP	Climate Change Action Plan
CCR	California Code of Regulation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Places
CWA	California Water Act
DHS	Department of Health Services
FEIR	Final Environmental Impact Report
FMMP	Important Farmland Mapping and Monitoring Program
IS/MND	Initial study
ISR	Indirect Source Review
MCL	Maximum Contaminant Level
MEIR	Master Environmental Impact Report
NOI	Notice of Intent
ND	Negative Declaration
NAC	Noise Abatement Criteria
RCRA	Resource Conservation and Recovery Act of 1976
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SHPO	State Historic Preservation Office
SJVAPCD	San Joaquin Valley Air Pollution Control District
SSJVIC	Southern San Joaquin Information Center
SWPPP	Storm Water Pollution Prevention Plan
TCR	Tribal Cultural Resource
UWMP	Urban Water Management Plan

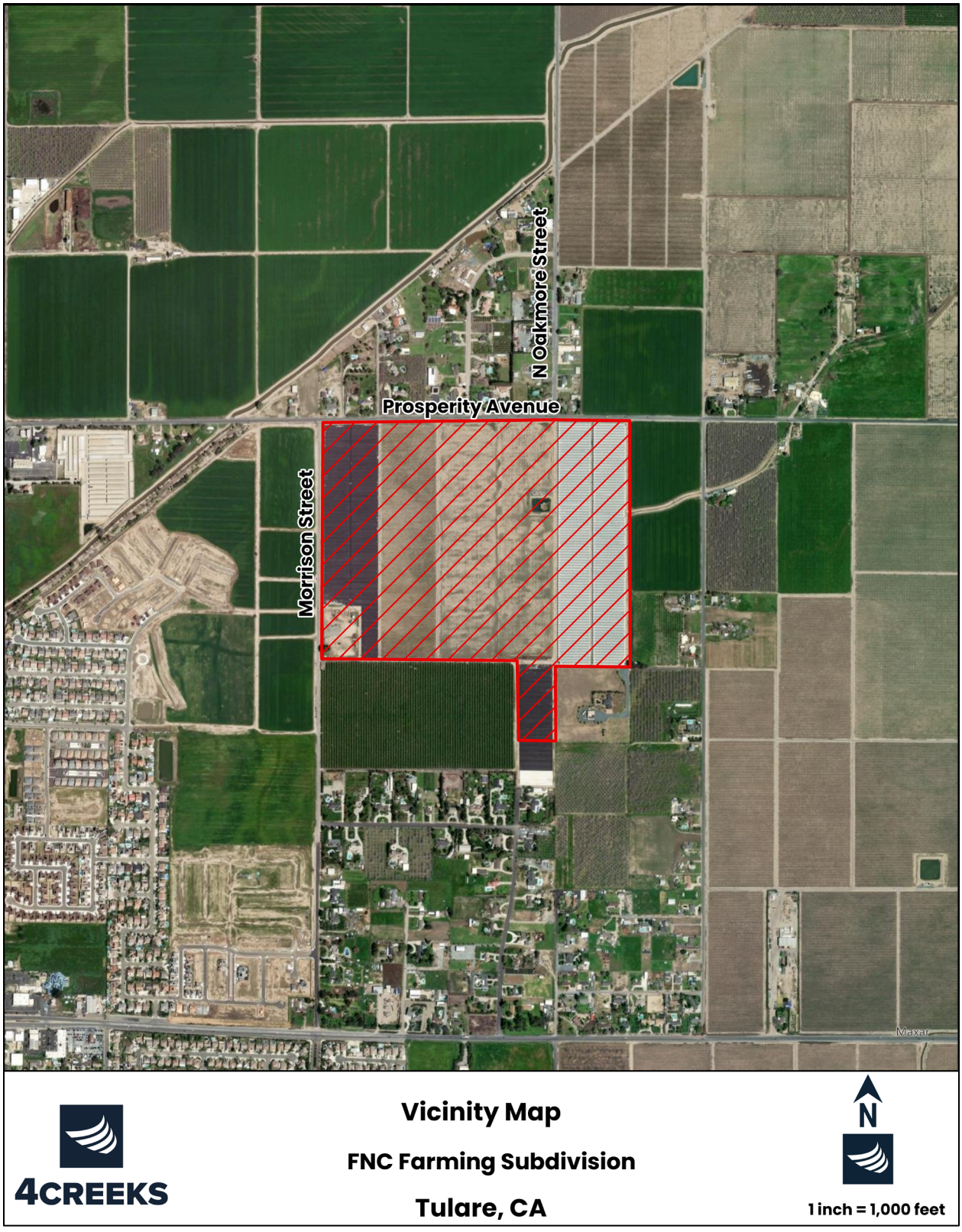

Figure 1. Vicinity Map



Figure 2. Regional Location Map

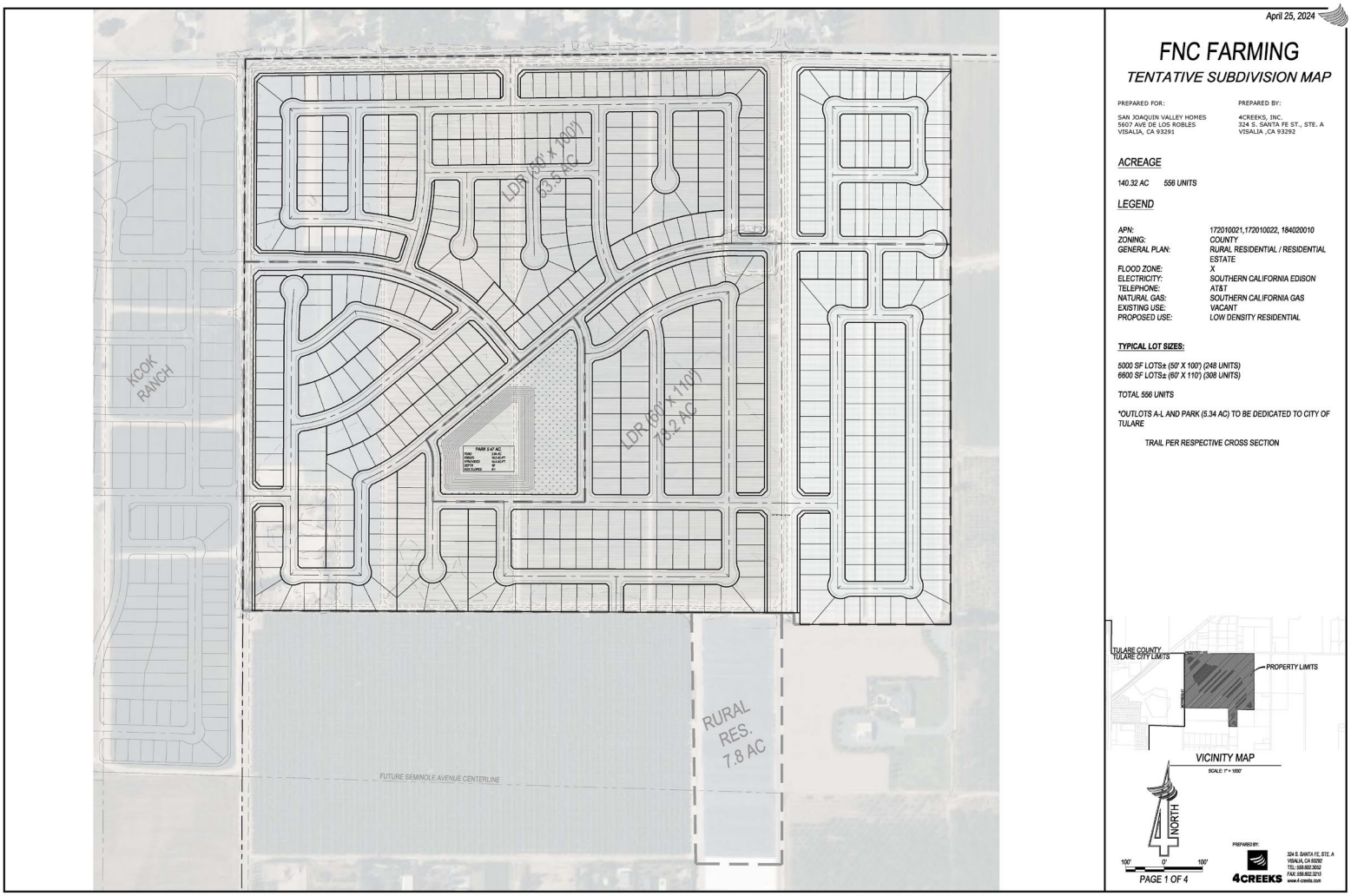

Figure 3: Conceptual Site Plan

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "no Impact" answers that are adequately supported by the information sources a lead agency cites, in the parentheses following each question. A "No Impact" answer is adequately supported if the reference information sources show that the impact simply does not apply to Projects like the one involved (e.g., the Project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on Project-specific factors as well as general standards (e.g., the Project will not expose sensitive receptors to pollutants, based on a Project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as Project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c) (3)(D). In this case, a brief discussion should identify the following.

    - Earlier Analysis Used. Identify and state where they are available for review.
    - Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    - Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated." Describe and mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the Project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Public Services
☑ Agriculture & Forest Resources	☐ Hazards & Hazardous Materials	☐ Recreation
☐ Air Quality	☑ Hydrology and Water Quality	☐ Transportation
☑ Biological Resources	☐ Land Use and Planning	☑ Tribal Cultural Resources
☑ Cultural Resources	☐ Mineral Resources	☐ Utilities & Service System
☐ Energy	☐ Noise	☐ Wildfire
☑ Geology & Soils	☐ Population	☑ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency) Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION WILL BE PREPARED.

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

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

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

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

SIGNATURE _____ DATE _____

Steven Sopp _____ City of Tulare _____

PRINTED NAME AGENCY

ENVIRONMENTAL ANALYSIS

The following section provides an evaluation of the impact categories and questions contained in the checklist and identify mitigation measures, if applicable.

I. AESTHETICS

Except as provided in Public Resource Code Section 210999, would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☑	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?	☐	☐	☐	☑
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☑
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

Environmental Setting

There are no aesthetic resources identified in the City of Tulare General Plan; however, the views of the Sierra Nevada Mountains are considered to be an important scenic vista in Tulare County.

Sierra Nevada Mountains: The Sierra Nevada Mountain range and its foothills stretch along the east area of the county and are a valuable aesthetic resource. Additionally, Sequoia National Park is located within the stretch of the Sierra Nevada Mountains located in Tulare County. Sequoia National Forest is a U.S. National Forest known for its mountain scenery and natural resources. Located directly north of Sequoia National Park is Kings Canyon National Park, a U.S. National Park also known for its towering sequoia trees and scenic vistas. The Sierra Nevada

Mountains are approximately 17 miles east of the proposed Project site, but views of the mountains are not visible on most days due to poor air quality. The following photos demonstrate the aesthetic character of the Project area. As shown, the proposed Project site is on a relatively flat area with agriculture, surrounded by residential and agriculture uses. The Sierra Nevada Mountains are slightly visible facing east.

Existing Visual Character

The following photos demonstrate the aesthetic character of the Project area. As shown, the proposed Project site area is in a relatively flat area characterized by agricultural uses.



Photo 1: Northwest Site Boundary (View Southeast) Source: Google Maps 2022



Photo 2: Western Site Boundary (View East) Source: Google Maps 2022



Photo 3: Northern Site Boundary (View South) Source: Google Maps 2022

Regulatory Setting

Scenic Roadways

The California Scenic Highway Program was established in 1963 by the State Legislature for the purpose of protecting and enhancing the natural beauty of California highways and adjacent corridors through conservation strategies. The State Scenic Highway System includes a list of highways that have either been officially designated or are eligible for designation. State laws affiliated with governing the scenic highway program can be found in Sections 260-263 in The Street and Highways Code.

State Scenic Highways: The State Scenic Highway Program was implemented by Caltrans and was developed to preserve the aesthetic quality of certain highway corridors. Highways included in this program are designated as scenic highways. A highway is designated as scenic based on how much of the natural landscape is visible to travelers, the quality of that landscape, and the extent to which development obstructs views of the landscape. There are no designated State Scenic Highways or highways that are eligible for designation within the City of Tulare.

City of Tulare General Plan: The City of Tulare General Plan includes the following aesthetic goals and policies that are intended to protect the City's aesthetic resources and are relevant to the proposed Project.

- **LU-P13.14 Scenic Features and Views.** The City shall preserve its scenic features and view corridors to the mountains.
- **LU-P13.2 City Image.** The City shall encourage a high level of design quality (architectural and landscape) for all new development in order to create a pleasant living environment, a source of community pride, and an improved overall City image.

Tulare County General Plan

The 2030 Tulare County General Plan contains following goals and policies related to aesthetic resources that correlate to the proposed Project:

> *SL-1.1 Natural Landscapes*: During review of discretionary approvals, including parcel and subdivision maps, the County shall, as appropriate, require new development to not significantly impact or block views of Tulare County's natural landscapes.
>
> 1. Be sited to minimize obstruction of views from public lands and rights-of-ways,
> 3. Screen parking areas from view,
> 4. Include landscaping that screens the development,
> 5. Limit the impact of new roadways and grading on natural settings, and
> 6. Include signage that is compatible and in character with the location and building design

SL-1.2 Working Landscapes: The County shall require that new non-agricultural structures and infrastructure located in or adjacent to croplands, orchards, vineyards, and open rangelands be sited so as to not obstruct important viewsheds and to be designed to reflect unique relationships with the landscape.

1. Referencing traditional agricultural building forms and materials,
2. Screening and breaking up parking and paving with landscaping, and
3. Minimizing light pollution and bright signage.

SL-3.2 Urban Expansion–Edges: The County shall design and plan the edges and interface of communities with working and natural landscapes to protect their scenic qualities by:

1. Maintaining urban separators between cities and communities,
2. Encouraging cities to master plan mixed-density neighborhoods at their edges, locating compatible lower density uses adjacent to working and natural landscapes, and
3. Protecting important natural, cultural, and scenic resources located within areas that may be urbanized in the future

City of Tulare Zoning Ordinance

The Tulare Zoning Ordinance governs the distribution and intensity of land uses, sets the principles for evaluating development and guides the development and growth of the City. The Zoning Ordinance establishes specific development criteria for each zoning district (i.e., parking requirements, walls, fencing, setbacks, building height, etc.).

Discussion

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

Less than Significant Impact: A scenic vista is defined as a viewpoint that provides expansive views of highly valued landscape for the benefit of the general public. The Sierra Nevada mountains to the East and agricultural lands surrounding the city are the primary scenic vista within this region and the Land Use Element of the City's General Plan states that view corridors to the mountains should be preserved. The site is surrounded by agricultural uses while the Sierra Nevada foothills are approximately 17 miles east of the Project site, and not visible on most days due to poor air quality. The Project would obstruct some views of agricultural uses. However, the Project would not significantly alter views overall from the surrounding community. There is *a less than significant impact.*

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

No Impact: There are no officially designated State Scenic Highways located in the City of Tulare. Highway 198 is the nearest Eligible State Scenic Highway and is located approximately 8 miles north of the Project site. The proposed Project would not damage any scenic resources within a state scenic highway and there is *no impact.*

c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

No Impact: The proposed Project site is adjacent to an urbanized area with sing-family residences existing to the north and being constructed to the west. There are also rural residential properties existing within approximately 1,000 feet to the south. The materials, signage, fencing, landscaping, and building materials used in the construction of the Project will be selected based on their ability to improve the overall visual character of the area. The proposed Project will comply with all applicable zoning and other regulations governing scenic quality. There is *no impact.*

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

Less than Significant Impact: The proposed Project would result in new lighting sources on the Project site consistent with adjacent residential development. New lighting sources would include interior lighting from residences, street lighting, and security lighting. All street and landscape lighting will be consistent with the City's lighting standards, which are developed to minimize impacts related to excessive light and glare. Additionally, the Project would comply with the City's General Plan Policies LU-P13.24 and LU-P13.25 to prevent excess spillover lighting that could otherwise occur within the vicinity of the Project area. Although the Project will introduce new light sources to the area, all lighting will be consistent with adjacent residential land uses and the City's lighting standards. The impacts are *less than significant.*

II. AGRICULTURE AND FOREST RESOURCES:

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☑	☐	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☑	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned	☐	☐	☐	☑

timberland Production (as defined by Government Code section 51104(g)?				
d) Result in the loss of forestland or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	☐	☑	☐	☐

Environmental Setting

Agriculture is a vital component of the City of Tulare's economy and is a significant source of the City's cultural identity. As such, preserving the productivity of agricultural lands is integral to maintaining the City's culture and economic viability.

The proposed Project site is not under the Williamson Act Contract but is designated as Prime Farmland under the Important Farmland Mapping and Monitoring Program (FMMP). The Project site is currently used for row-crop agriculture and is bounded by agricultural activities to the North, South and East.

Regulatory Setting

California Land Conservation Act of 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, allows local governments to enter into contracts with private landowners to restrict the activities on specific parcels of land to agricultural or open space uses. The landowners benefit from the contract by receiving greatly reduced property tax assessments. The California Land Conservation Act is overseen by the California Department of Conservation; however local governments are responsible for determining specific allowed uses and enforcing the contract.

Right to Farm Ordinance

Tulare County adopted a "Right to Farm Ordinance," to protect the rights of commercial farming operations, while promoting a "good neighbor policy" between these uses. Under this ordinance, property owners and residents are made aware that they may experience inconveniences due to commercial agricultural operations.

California Farmland Mapping and Monitoring Program (FMMP)

The FMMP is implemented by the California Department of Conservation (DOC) to conserve and protect agricultural lands within the State. Land is included in this program based on soil type, annual crop yields, and other factors that influence the quality of farmland. The FMMP mapping categories for the most important statewide farmland are as follows:

- ***Prime Farmland*** has the ideal physical and chemical composition for crop production. It has been used for irrigated production in the four years prior to classification and can produce sustained yields. 51% of the Tulare Planning Area is classified as Prime Farmland.
- ***Farmland of Statewide Importance*** has also been used for irrigated production in the four years prior to classification and is only slightly poorer quality than Prime Farmland. 11% of the Tulare Planning Area is classified as Farmland of Statewide Importance.
- ***Unique Farmland*** has been cropped in the four years prior to classification and does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has produced specific crops with high economic value. Less than 1% of the Tulare Planning Area is classified as Unique Farmland.
- ***Farmland of Local Importance*** encompasses farmland that does not meet the criteria for the previous three categories. These may lack irrigation, produce major crops, be zoned as agricultural, and/or support dairy. 2% of the Tulare Planning Area is classified as Farmland of Local Importance.

City of Tulare Code of Ordinances – Chapter 10.222: Farmland Mitigation

The objectives set forth in § 10.222.020 are as follows:

"A) Protect agriculture as a crucial component of Tulare's economy and cultural heritage;
B) Protect and preserve agricultural lands from the effects of urban encroachment;
C) Balance the need for agricultural land conservation with other public goals in Tulare, including the need for housing, commercial, industrial, and infrastructure development; and
D) Foster coordination and cooperation by the City of Tulare with the County of Tulare, Local Agency Formation Commission, and neighboring cities, including the City of Visalia, to facilitate an integrated and comprehensive regional approach to agricultural land conservation."
(Ord. 2020-03, passed 2-18-2020)

§ 10.22.050 outlines the "Mitigation Obligations", which apply to the conversion of one or more acres of Critical Farmland (Prime, Farmland of Statewide Importance, Unique Farmland, Grazing Land) into a non-agricultural use. The mitigation policy is as follows:

"A) As mitigation for the conversion of critical farmland, the applicant shall arrange for the imposition of an agricultural conservation easement on no less than one acre of mitigation

land for each acre of land proposed for conversion. The applicant shall convey, or arrange for the conveyance of, such agricultural conservation easement to a qualified entity. The mitigation land shall be comparable to the land proposed for conversion, as provided in § 10.222.070 of this chapter."

City of Tulare General Plan

The 2035 General Plan includes the policies related to agricultural resources that correlate to the proposed Project:

- **COS-P3.1 Protect Interim Agricultural Activity.** The City shall protect the viability of existing interim agricultural activity in the UDB to the extent possible.
- **COS-P3.3 Agricultural Disclosures.** The City shall require that developers of residential Projects, which are within general proximity of agricultural operations in the city, to provide notification to new homeowners within their deeds of the City's right to farm ordinance.
- **COS-P3.12 Mitigation for Agricultural Land Conversion.** The City shall create and adopt a mitigation program to address the conversion of Prime Farmland & Farmland of Statewide Importance within the UDB and outside the city limits to non-agricultural uses. This mitigation program shall:
    - Require a 1:1 ratio of agricultural land preserved for every acre of land converted.
    - Require land to be preserved be equivalent to the land converted, e.g. Prime Farmland, and further require that the land to be preserved has adequate existing water supply to support agricultural use, is designated and zoned for agriculture, is located outside of a city UDB, and is within the southern San Joaquin Valley.
    - Require mitigation prior to or at time of impact.
    - Allow mitigation to be provided either by purchase of agricultural easements or by payment of agricultural mitigation fees, but state that purchase of conservation easements is the preferred form of mitigation. Both purchase of easements and payment of mitigation fees should cover not only the cost of an agricultural easement, but additional costs of transactional fees and administering, monitoring, and enforcing the easement.
    - Require easements to be held by and/or mitigation fees to be transferred to a qualifying entity, such as a local land trust with demonstrated experience administering, monitoring and enforcing agricultural easements.
    - Require the qualifying entity to submit annual status and monitoring reports to the City and to Tulare County.

- Allow stacking of conservation and agricultural easements if habitat needs of species on conservation easement are compatible with agricultural activities/use on agricultural easement.
- Allow exemptions for conversion of land to agricultural tourism uses, agricultural processing uses, agricultural buffers, public facilities, and roadways.

Tulare County General Plan

The 2030 Tulare County General Plan contains following goals related to agricultural resources that correlate to the proposed Project:

- Promote the long-term preservation of productive and potentially productive agricultural lands and to accommodate agricultural-support services and agriculturally related activities that support the viability of agriculture and further the County's economic development goals;
- Support increased viability of agriculture production and promote high-value, employment-intensive, and diverse agricultural production, and processing in Tulare County;
- Support the reasonable development and economic viability of animal confinement facilities.

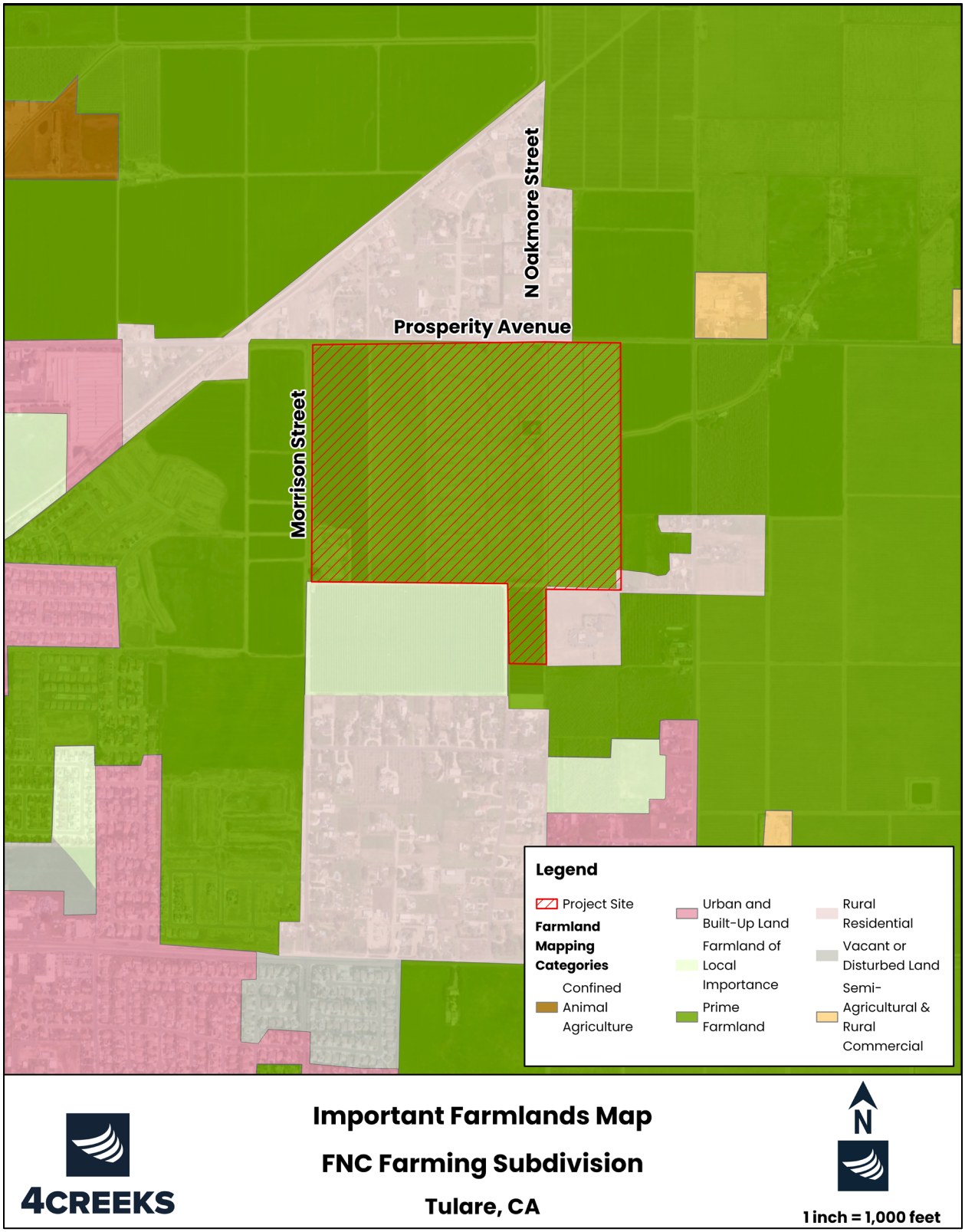

Figure 4: Important Farmlands Map

Discussion

a) Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Potentially Significant Impact: The Project site is currently occupied by agricultural land with field crops. Implementation of the proposed Project would result in the permanent conversion of approximately 140.32 acres of Prime Farmland as classified by the California Department of Conservations Farmland Mapping and Reporting Program to non-agricultural uses. The Project would include the development of Single-Family Residences and a small community park/pond. The Project site is actively utilized for the agricultural production of millet-rice and blueberries. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station stock pond.

Although the proposed site is located on Prime Farmland, the conversion of the site to non-agricultural land is in accordance with the City's 2035 General Plan. The site is within the 2035 Urban Development Boundary and is designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) by the General Plan. Although the amount of "Prime Farmland" lost to this development represents only a fraction of a percent of the 366,136 acres of Prime Farmland available within Tulare County, the direct loss of this farmland is considered significant, even with implementation of Mitigation Measure AG-1.

Mitigation Measure AG-1 would require the Project proponent to mitigate the loss of agricultural land according to the requirements set forth in the City of Tulare Code of Ordinances, Chapter 10.222. Mitigation Measure AG-1 requires the acquisition of agricultural conservation easements of no less than one acre for every acre of critical farmland being converted to non-agricultural uses. Although Mitigation Measure AG-1 will preserve farmland that may be converted to non-agricultural use in the future, it does not provide additional farmland to replace the 140.32 acres lost as a result of the proposed Project. Although the proposed Project would constitute a small portion of the County's overall Prime Farmland, the conversion of the site to non-agricultural uses could result in *potentially significant* impacts even with incorporation of Mitigation Measure AG-1.

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act Contract?

Less Than Significant Impact: The site is currently zoned for Exclusive Agriculture 20-Acres and 40-Acres (AE-20, AE-40) by Tulare County. Although the site is currently under Tulare County jurisdiction, it is within the City of Tulare's Urban Development Boundary and is proposed to be annexed into the City. The Project site currently has a City of Tulare General Plan designation of Residential Estate and Rural Residential which would allow the

conversion of farmland to residential development on larger lots. The applicant is proposing to change the General Plan land use designation to low-density residential to accommodate the proposed development of the Project. The Project site is also proposed to be pre-zoned to the R-1-5 (Single-Family Residential, 5,000 sq. ft. minimum lot area zoning designation). This action, if approved would make the Project consistent. The Project site is not subject to a Williamson Act Contract. There is *a less than significant impact.*

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned timberland Production (as defined by Government Code section 51104(g)?

No Impact: The Project site is not zoned for forest or timberland production. Therefore, *no impacts* would occur.

d) Would the Project result in the loss of forestland or conversion of forest land to non-forest use?

No Impact: No conversion of forestland, as defined under Public Resource Code or General Code, will occur as a result of the Project and there would be *no impacts*.

e) Would the Project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?

Potentially Significant Impact: As described above, the Project proposes the permanent conversion of approximately 140.32-acres of agricultural land to non-agricultural land use. Although the Project proponent will be required to mitigate the loss of agricultural land at a ratio of 1:1 through implementation of conservation easements per Mitigation Measure AG-1, the Project will result in the conversion of Farmland to non-agricultural uses. Additionally, the implementation of 140.32 acres of residential development may further promote the conversion of nearby agricultural sites to non-agricultural land uses. This may occur as a result of population growth and the resource needs associated with a growing population, resulting in the development of commercial land uses adjacent to the proposed residential development. Since agricultural lands would be converted to non-agricultural uses, there would be *potentially significant* impacts to this resource, which will be analyzed more closely in the EIR prepared for this Project. he Project does not include any features which could result in the conversion of forestland to non-forest use.

Mitigation Measure

Mitigation Measure AG-1: Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion:

- Funding and/or purchasing agricultural conservation easements which shall be managed and maintained by an appropriate entity;
- Purchasing credits from an established agricultural farmland mitigation bank;
- Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or
- Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above.

The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the Project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage calculation, along with written evidence of compliance. Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☑	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☑	☐	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☑	☐

Environmental Setting

Air pollution is directly related to regional topography. Topographic features can either stimulate the movement of air or restrict air movement. California is divided into regional air basins based on topographic air drainage features. The proposed Project site is within the San Joaquin Valley Air Basin, which is bordered by the Sierra Nevada Mountains to the East, Coastal Ranges to the West, and the Tehachapi Mountains to the South.

The mountain ranges surrounding the San Joaquin Valley Air Basin (SJVAB) serve to restrict air movement and prevent the dispersal of pollution. As a result, the SJVAB is highly susceptible to pollution accumulation over time. As shown in Table 1, the SJVAB is in nonattainment for several pollutant standards. The primary pollutants of concern in the San Joaquin Valley are ozone (O3) and PM10.

Pollutant	**Designation/Classification**	
	Federal Standards	**State Standards**
Ozone – One hour	No Federal Standard[f]	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme[e]	Nonattainment
PM 10	Attainment[c]	Nonattainment
PM 2.5	Nonattainment[d]	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment

Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

[a] See 40 CFR Part 81

[b] See CCR Title 17 Sections 60200-60210

[c] On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

[d] The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).

[e] Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

[f] Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

Table 1. San Joaquin Valley Attainment Status; Source: SJVAPCD

Valley Fever

Valley Fever is an illness caused by a fungus (*Coccidioides immitis* and *C. posadasii*) that grows in soils under certain conditions. Favorable conditions for the Valley Fever fungus include low rainfall, high summer temperatures, and moderate winter temperatures. In California, the counties with the highest incident of Valley Fever are Fresno, Kern and Kings counties. When soils are disturbed by wind or activities like construction and farming, Valley Fever fungal spores can become airborne. The spores present a potential health hazard when inhaled. Individuals in occupations such as construction, agriculture, and archaeology have a higher risk of exposure due to working in areas of disturbed soils which may have the Valley Fever fungus.

Regulatory Setting

City of Tulare General Plan (2035)

The 2035 General Plan includes the following goals and policies related to air quality that correlate to the proposed Project:

Goal AQ-1: To promote better air quality conditions locally and regionally.

- **AQ-P1.2 Cumulative Air Quality Impacts.** The City shall require developments to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Developers shall be required to present alternatives that reduce air emissions and enhance, rather than harm, the environment.
- **AQ-P2.7 Mixed Land Uses.** The City shall encourage the mixing of land uses that generate high trip volumes, especially when such uses can be mixed with support services and where they can be served by public transportation.

Federal Clean Air Act

The 1977 Federal Clean Air Act (CAA) authorized the establishment of the National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. The Clean Air Act identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to meet interim milestones. The U.S. EPA is the federal agency charged with administering the Act and other air quality-related legislation. EPA's principal functions include setting NAAQS; establishing minimum national emission limits for major sources of pollution; and promulgating regulations. Under CAA, the NCCAB is identified as an attainment area for all pollutants.

California Clean Air Act

California Air Resources Board coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, the California Air Resources Board monitors existing air quality, establishes California Ambient Air Quality Standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by air pollution control and management districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The Project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and

welfare. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation, and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM_{10} standard on September 21, 2006, when a new $PM_{2.5}$ 24-hour standard was established.

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (03)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet 8 Hour Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	20 µg/m3		--		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour		Gravimetric or Beta Attenuation	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	12 µg/m³		15 µg/m³		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		--	--	
Nitrogen Dioxide (NO_2) [8]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	--	Gas Phase Annual Chemiluminescence
	Arithmetic Mean	0.030 ppm (57 µg/m³)		53 ppb (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m³)	

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)9	--	
	Annual Arithmetic Mean	--		0.030 ppm (for certain areas)9	--	
Lead[10,11]	30 Day Average	1.5 µg/m³	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m3 (for certain areas)11	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m³		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01ppm (26 µg/m³)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]

quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, a new 1-hour SO2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
11. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table 2. Ambient Air Quality Standards; Source: SJVAPCD

San Joaquin Valley Air Pollution Control District (SJVAPCD)

The SJVAPCD is responsible for enforcing air quality standards in the Project area. To meet state and federal air quality objectives, the SJVAPCD adopted the following thresholds of significance for Projects:

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
Nox	10	10	10
ROG	10	10	10
SOx	27	27	27
PM10	15	15	15
PM2.5	15	15	15

Table 3. SJVAPCD Thresholds of Significance for Criteria Pollutants; Source: SJVAPCD

The following SJVAPCD rules and regulations may apply to the proposed Project:

- **Rule 3135:** Dust Control Plan Fee. All Projects which include construction, demolition, excavation, extraction, and/or other earth moving activities as defined by Regulation VIII (Described below) are required to submit a Dust Control Plan and required fees to mitigate impacts related to dust.
- **Rule 4101:** Visible Emissions. District Rule 4101 prohibits visible emissions of air contaminants that are dark in color and/or have the potential to obstruct visibility.
- **Rule 9510:** Indirect Source Review (ISR). This rule reduces the impact PM10 and NOX emissions from growth on the SJVB. This rule places application and emission reduction requirements on applicable development Projects in order to reduce emissions through onsite mitigation, offsite SJVAPCD administered Projects, or a combination of the two. This Project will submit an Air Impact Assessment (AIA) application in accordance with Rule 9510's requirements.
- **Regulation VIII:** Fugitive PM10 Prohibitions. Regulation VIII is composed of eight rules which together aim to limit PM10 emissions by reducing fugitive dust. These rules contain required management practices to limit PM10 emissions during construction, demolition, excavation, extraction, and/or other earth moving activities.

Discussion

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact: The proposed Project is located within the boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD) and would result in air pollutant emissions that are regulated by the air district during both its construction and operational phases. The SJVAPCD is responsible for bringing air quality in the Tulare Planning Area into compliance with federal and state air quality standards. The Air District has Particulate Matter (PM) plans, Ozone Plans, and Carbon Monoxide Plans that serve as the clean air plan for the basin. Together, these plans quantify the required emission reductions to meet federal and state air quality standards and provide strategies to meet these standards. The SJVAPCD adopted the Indirect Source Review (ISR) Rule in order to fulfill the District's emission reduction commitments in its PM10 and Ozone (NOx) attainment plans and has since determined that implementation and compliance with ISR would reduce the cumulative PM10 and NOx impacts anticipated in the air quality plans to a less than significant level. Included in the particulate matter category is diesel particulate matter (DPM), which is considered a toxic air contaminant (TAC) and is also monitored by the SJVAPCD. Further discussion concerning this pollutant is included in Threshold B as well as the EIR prepared for the Project.

Construction Phase. Project construction would generate pollutant emissions from the following construction activities: site preparation, grading, building construction, application of architectural coatings, and paving. The construction related emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment A1. As shown in Table 4 below, Project construction related emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	NOx (tpy)	PM10 (tpy)	PM2.5 (tpy)
Emissions Generated from Project Construction	**3.4420**	**3.4553**	**0.0085**	**3.5006**	**1.3955**	**0.6685**
SJVAPCD Air Quality Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 4. Projected Construction Emissions for Criteria Pollutants; Source: SJVAPCD, CalEEMod (v. 2020.4.0) Analysis (Attachment A1)

Operational Phase. Implementation of the proposed Project would result in long-term emissions associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, as well as mobile emissions. However, the emissions will not exceed the thresholds established by the SJVAPCD. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod report for the Project can be found in Attachment A1. See Table 5 for the estimated operational emissions resulting from the proposed Project.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	NOx (tpy)	PM10 (tpy)	PM2.5 (tpy)
Operational Emissions (Dry Years)	**19.6762**	**5.8669**	**0.0391**	**2.2716**	**5.4895**	**1.4981**
SJVAPCD Air Quality Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 5. Projected Operational Emissions for Criteria Pollutants; Source: SJVAPCD, CalEEMod (v. 2020.4.0) Analysis (Attachment A1)

Because the emissions from both construction and operation of the proposed Project would be at or below the thresholds of significance established by the SJVAPCD, the Project would not conflict with or obstruct implementation of an applicable air quality plan and there is *a less than significant impact.*

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact: The SJVAPCD is responsible for bringing air quality in the Tulare Planning Area into compliance with federal and state air quality standards. The significance thresholds and rules developed by the SJVAPCD are designed to prevent Projects from violating air quality standards or significantly contributing to existing air quality violations. As discussed above, neither construction-related emissions nor operation-related emissions will exceed thresholds established by the SJVAPCD. The Project will comply with all applicable SJVAPCD rules and regulations, which will further reduce the potential for any significant impacts related to air quality as a result of Project implementation. Because these thresholds and regulations are designed to achieve and/or maintain federal and state air quality standards, and the Project is compliant with these thresholds and regulations, the Project will not violate an air

quality standard or significantly contribute to an existing air quality violation. The impact is *less than significant.*

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact: The single-family residences located to the North are the closest sensitive receptors. The construction phase of the Project would release diesel particulate matter (DPM) emissions which has been classified as a carcinogen. DPM is formally classified as a Toxic Air Contaminant by the EPA and the California Air Resources Board (CARB), and the sensitive receptors near the site may be negatively impacted by exposure to the pollutant. The impact on sensitive receptors is *potentially significant* and will be analyzed further in the Health Risk Assessment (Core Environmental Consulting) and the EIR prepared for the Project.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact: The Project will create temporary localized odors during Project construction. The proposed Project will not introduce conflicting land uses (surrounding land includes residential neighborhoods) to the area and will not have any component that would typically emit odors. The Project would not create objectionable odors affecting a substantial number of people. Therefore, impacts would be *less than significant.*

III. BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish & Game or U.S. fish and Wildlife Service?	☐	☑	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☑	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director 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?	☐	☐	☑	☐
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?	☐	☐	☐	☑

Discussion for this section originates from the Biological Resource Assessment (BRA) that was prepared for this Project by SOAR Environmental Consulting to identify biological resources present or potentially present on the Project site and assess the significance of Project impacts on such resources per provisions of the California Environmental Quality Act (CEQA), the Federal Clean Water Act (CWA), the state and federal endangered species acts (FESA and CESA respectively), the California Fish and Game Code, and the California Water Code. The research included the California Natural Diversity Database (CNDDB), the United States Fish

and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society (CNPS) Online Rare Plant Inventory. The full document can be found in Attachment B.

Environmental Setting

The site is topographically flat and is bounded by agricultural uses to the South and East, single-family housing to the North, and a single-family subdivision that is currently under construction to the West. The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

The Project Area is approximately 4.7 miles south of the City of Visalia and immediately east of the City of Tulare in the Central Valley near the Sierra Nevada foothills. The property was used for irrigated row crops until recently. Currently the Project Area is primarily bare ground after irrigated row crop removal, with limited disturbance tolerant annual grasses and herbaceous weeds in patches, and few landscaped shrubs. A portion of the site is covered with a tarp to prevent weeds and a small portion is used to cultivate potted blueberries. A buried underground ditch, the Tulare Colony Ditch, occurs along the northern boundary. The topography is relatively flat, ranging from 295 feet above sea level to the south, sloping up to 302 feet above sea level to the north.

The Central Valley is bordered to the east by the Sierra Nevada Mountain Range to the east and the Coast Ranges to the west. According to the USDA NRCS Soil Survey the Project Area is composed from two soil types: Hanford sandy loam, 0 to 2 percent slopes, and Nord fine sandy loam, 0 to 2 percent slopes. Like most of California, Tulare is considered a Mediterranean climate with warm, dry summers and moist, cold winters. Summer temperatures often reach above 90 degrees Fahrenheit, and the humidity is relatively low. Winter temperatures are often below 60 degrees Fahrenheit during the day and rarely exceed 70 degrees. On average, Tulare receives approximately 11 to 12 inches of precipitation in the form of rainfall yearly, most of which occurs between October and March.

Site Description

The Project area is located on the corner of Morrison Street and Prosperity Avenue in Tulare County, California and is comprised of Assessor Parcel Numbers (APN) 172-080-002, 172-010-021, 172-010-022 and 184-020-010. The Project Area is in the eastern portion of the City of Tulare's Sphere of Influence, approximately 2 miles east of SR-99, 0.5 mile east of SR-65 and 0.45 mile north of SR-137. Although the site is currently under Tulare County jurisdiction, the 140.32-acre site is planned to be annexed into the City of Tulare as part of the proposed Project. A man-

excavated canal, the Tulare Colony Ditch, runs across east to west through the Project Area on the north side of the property near Prosperity Avenue.

The Project Area is located in the *Tulare* USGS 7.5-minute quadrangle in Township 20 South, Range 25 East, in the northeast quarter of Section 6 and in the northwest quarter of Section 5. Row crops surround the Project Area to the northeast and west, fallow fields to the immediate east but commercial and urban residential 0.5 miles east, urban residential to the north, and a mix of rural residential and orchards to the south. The Tulare Colony Ditch connects with Deep Creek 171 feet west, Outside Creek is 5.2 miles east, and Tulare Lake is 30 miles southwest to the Project Area. The irrigation system located on the north boundary of the Project Area has hydrologic connectivity to Tulare Lake, a seasonal lake and playa. A new subdivision including several city streets is being developed on the cleared properties to the east. The Project Area is fairly level and ranges from 295 to 302 feet elevation above mean sea level. The properties have functioned as active farmland with irrigated row crops, including a vegetated pump station irrigation pond. An underground irrigation drainage ditch is located along the northern boundary.

Prior to performing the Habitat Assessment, SOAR Environmental conducted a records search for threatened or endangered species that could potentially occur in the vicinity of the Project Area. The records search included a review of the California Natural Diversity Database (CNDDB), the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and California Native Plant Society (CNPS) Online Rare Plant Inventory. A full list of special-status wildlife and vascular plant species with the potential to occur in the Project Area is included below in Table 6.

Results from the data records search found 25 special-status species, comprised of 12 wildlife and 13 plant species. An analysis of recent occurrences, habitat suitability and proximity within 5-miles to the Project Area showed that there is one special-status wildlife species with a high potential of occurrence and four special-status wildlife species with low potential for occurrence. Special-status species for which there are no regulatory implications (i.e., lack of suitable habitat or no record of historical occurrences within 5 miles) are excluded from further analysis.

I. Species with High Potential for Occurrence:

- Burrowing Owl (*Athene cunicularia*)

II. Species with Low Potential for Occurrence:

- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's Hawk (*Buteo swainsonii*)
- Western Mastiff Bat (*Eumops perotis*)

- Western Pond Turtle (*Actinemys marmorata*)

Special-status species and sensitive habitats include plant and wildlife taxa, or other unique biological features afforded special protection by local land use policies, and/or state and federal regulations. Special-status plant and animal species are those listed as rare, threatened, or endangered under the state or federal Endangered Species Acts or those who are rare enough to become listed in the foreseeable future (Cal. Code Regs. Tit. 14 § 15380). Vegetation communities may call for special status if they are of limited distribution, have high wildlife value, or are particularly vulnerable to disturbance. Listed and special-status species are defined as:

- Listed or proposed for listing under the state or Federal Endangered Species acts.
- Protected under other regulations (e.g., Migratory Bird Treaty Act).
- California Department of Fish & Wildlife (CDFW) Species of Special Concern.
- Listed as species of concern by CNPS or USFWS; and/or
- Receive consideration during environmental review under CEQA.

All species from the search results are listed below including common and non-listed species. The analysis and following determination are based on Habitat Assessment results and the most recent occurrence and proximity to the Project Area (Table X, Table X).

- **Present:** Species known to occur on the site, based on CNDDB records, and/or were observed on the site during the field survey.
- **High:** Species known to occur on or near the site (based on CNDDB record within 5 miles), and/or there is suitable habitat on the site.
- **Low:** Species known to occur on or near the site (based on CNDDB record within 5 miles), but there is no suitable habitat onsite.
- **None:** Species is not known to occur within 5 miles of the site and there is no suitable habitat on the site. -OR- Species was surveyed during the appropriate season with negative results.

Species Name	*Listing Status	Habitat Requirements	Potential for Occurrence on Project Site
Amphibians			
California tiger salamander *(Ambystoma californiense)*	FT/ST	Grasslands, oak savannah riparian woodlands and lower elevations of coniferous forests, ditches, vernal pools, and wetlands.	**None.** Dependent on the presence of vernal pool habitat. Active agricultural land has no potential for the species.

Western Spadefoot Toad (*Spea hammondii)*	FC/SSC	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**None.** Dependent on the presence of vernal pool habitat. Additionally, lacks food source due to heavy commercial use of pesticide for agriculture.
Birds			
Swainson's hawk *(Buteo swainsoni)*	ST/SSC /BCC/MBTA	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Low:** Species known from a single occurrence over 5 miles from site to the west. Suitable habitat includes bird boxes situated on top of electrical poles and open foraging areas in the fallow fields of row crops.
Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)	SE/BCC/MBTA	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	**None.** No salt marsh or pickleweed nesting habitat occur in the Project area. No tidal flats.
Bullock's Oriole (*Icterus bullockii*)	BCC/MBTA	Found in open broadleaf woods, foraging among leaves in trees.	**None.** Species is not known to occur on within 5 miles of the site and there is no suitable habitat on the site.
Burrowing Owl (*Athene cunicularia*)	SSC/BCC/MBTA	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**High.** Small mammal burrows between 2 and 3 inches in diameter were found in abundance providing suitable habitat for this species, and a was observed during the KCOK Habitat Assessment in March 2022.
California Gull (*Larus californicus*)	CWL/BCC/MBTA	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mudflats, marshes, lakes, etc. Colonial nesters on islets in large interior lakes, either fresh or strongly alkaline.	**None.** No habitat occurs for this aquatic bird species.
Marbled Godwit (*Limosa fedoa*)	BCC/MBTA	Shortgrass prairies near wetlands.	**None.** The Project area lacks suitable wetland habitat for this species. The Project area lacks shortgrass prairies near wetlands.
Nuttall's Woodpecker (*Picoides nuttallii*)	BCC/MBTA	Wooded canyons and foothills, river woods. In much of range almost always around oaks,	**None.** No habitat occurs for this woodland bird species.

		especially where oaks meet other trees along rivers, also in pine-oak woods in foothills.	
Oak Titmouse (*Baeolophus inornatus*)	BCC/MBTA	Woodland dominated by oaks, riparian habitats, and coast live oak trees within, nests in tree cavities.	**None.** No habitat occurs for this oak woodland bird species.
Invertebrates			
American Bumble Bee (*Bombus pensylvanicus)*	None (vulnerable)	Prefers habitats offered by farmlands and open fields where they nest below the grass or underground.	**None:** The Project area lacks the native wildflower field nectar habitat needed to support this species.
Monarch butterfly (*Danaus plexippus*)	FC	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**None:** No roosting, foraging (nectar-flowers) or reproductive host plant habitat (Milkweed, Asclepias sp.) is present in the Project area.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Endemic to the vernal pools in grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**None:** No seasonal aquatic habitat for this species, such as vernal pools, occurs in the Project area.
Mammals			
Buena Vista Lake Ornate Shrew *(Sorex ornatus relictus)*	FE/SSC	Found near water sources in protective groundcover like deep leaf litter, cattails and fallen logs. Found in grassland and desert scrub within a few hundred feet of water sources, or where water is close to the surface and their prey can be found. Also found in lake with a considerable inland body of standing water, rural environments influenced by humans such as agriculture, silviculture, or aquaculture, wetland areas such as marshes or swamps covered often	**None.** The irrigation pump pond is an open and exposed area. The Project area lacks a groundcover and is maintained regularly. Regular use of commercial grade pesticide for agriculture may also reduce prey such as snails and worms.

		intermittently or saturated soils, springs, or seeps.	
Western Mastiff Bat (*Eumops perotis californicus)*	SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Low:** Limited day/feeding roosting to bird boxes. Open fallow fields provide foraging habitat for this species in the Project area. Species is known from one bat record 5 miles north of Project area.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE/ST	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**Low:** Site has dispersal, foraging and denning habitat and a previous record occurring within 5 miles surrounding the Project area.
Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*)	FE/SE	Saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.	**None:** No alkali scrub or sink scrub habitat occurs in the Project area. No seed forage habitat occurs in the Project area. The Project area is an active agricultural field.
Reptiles			
Blunt-nosed leopard lizard (*Gambelia sila*)	FE/SE/FP	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.	**None:** No alkali scrub or desert scrub habitat occurs in the Project area. The Project area is an active agricultural field.
Western Pond Turtle (*Actinemys marmorata)*	FPT/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet of elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Low:** High quality potential habitat in the form of an open water vegetated irrigation pump pond in the middle of the Project area. The pond is lined with dirt and surrounded by fallow field of row crops providing basking habitat. No CNDDB occurrence recorded.
Plants	***Status Fed/CA/CNPS /Bloom Period**	**Habitat Description**	**Potential for Occurrence**
Alkali-sink Goldfields (*Lasthenia chrysantha*)	1B.1 Feb.-Apr	Vernal pools, alkaline microhabitat. Found at	**None:** No vernal pool habitat occurs in the Project Area.

		elevations between 0 and 655 feet.	
Brittlescale (*Atriplex depressa*)	1B.2 Apr.-Oct.	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Alkaline and clay microhabitat. Found at elevations between 5 and 1,050 feet.	**None:** No native habitat or vernal pool habitat occurs in the Project area.
California Alkali Grass (*Puccinellia simplex*)	1B.2 Mar.-May	Chenopod scrub, meadows and seeps, valley and foothill grassland and vernal pools. Sinks, alkaline, flats, lake margins, and vernally mesic microhabitats. Found at elevations between 5 and 3,050 feet.	**None:** No vernal pool habitat or chenopod scrub occurs in the Project area.
San Joaquin adobe sunburst (*Pseudobahia peirsonii*)	FT/CE/1B.1 Feb.-Apr.	Cismontane woodland, valley and foothill grassland. Adobe or clay microhabitat. Found at elevations between 295 and 2,625 feet.	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.
California Jewelflower (*Caulanthus californicus*)	FE/CE/1B.1 Feb.-May	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland. Found at elevations between 200 and 3,280 feet.	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.
California Satintail (*Imperata brevifolia*)	2B.1 Sep.-May	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub. Mesic microhabitat. Found at elevations between 0 and 3,985 feet.	**None:** No wetland habitat or shrub-dominated habitat occurs in the Project area.
Earlimart Orache (*Atriplex cordulata var. erecticaulis*)	1B.2 Aug.-Sep. (Nov)	Valley and foothill grassland. Vernally mesic microhabitat. Found at elevations between 130 and 330 feet.	**None:** Though some grassland occurs in the Project area it is not within vernal pool or vernal swale habitat. Species not observed during current survey effort.
Ewan's Larkspur (*Delphinium hansenii ssp. ewanianum*)	4.2 Mar.-May	Cismontane woodland, valley, and foothill grassland. Found at elevations between 195 and 1,970 feet.	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.
Heartscale (*Atriplex cordulata var. cordulata*)	1B.2 Apr.-Oct.	Chenopod scrub, meadows and seeps, valley, and foothill grassland. Microhabitats are sometimes saline, sometime	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.

		alkaline. Found at elevations between 0 and 1,835 feet.	
Lesser Saltscale (*Atriplex miniscula*)	1B.1 May-Oct.	Chenopod scrub, playas, valley and foothill grassland. Microhabitats are alkaline or sandy. Found at elevations between 50 and 655 feet.	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.
Recurved Larkspur (*Delphinium recurvatum*)	1B.2 Mar.-Jun.	Chenopod scrub, cismontane woodland, valley, and foothill grassland. Alkaline microhabitat. Found at elevations between 10 and 2,590 feet.	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.
Spiny-sepaled Button-celery (*Eryngium spinosepalum*)	1B.2 Apr.-Jun.	Vernal pools, valley, and foothill grassland. Found at elevations between 260 and 3200 feet.	**None:** No vernal pool habitat occurs in the Project area.
Subtle Orache (*Atriplex subtilis*)	1B.2 (Apr) Jun.-Sep. (Oct)	Valley and foothill grassland. Found at elevations between 130 and 330 feet.	**None:** The Project area is composed entirely from agricultural land and lacks a native seedbank.

Table 6: Special Status Species Potentially on Project Site

***Listing Status Notes:**

Federal: FE – Federally listed Endangered
FT – Federally listed Threatened
FC – Federal Candidate Species
FPT – Federal Proposed Threatened
FWL – USFWS Watch List
BCC – USFWS Bird of Conservation Concern
MBTA – Migratory Bird Treaty Act

State: CE – State Listed as Endangered
SE – State listed Endangered
ST – State listed Threatened
SC – State Candidate Species
SR – State Rare Species
SA – State Special Animal
FP – CDFW Fully Protected Species
SSC – CDFW Species of Special Concern
CWL – CDFW Watch List

CRPR: California Native Plant Society Rare Plant Rank
1A – Considered extirpated in CA
1B – Rare, threatened, or endangered in CA and elsewhere
2 – Rare, threatened, or endangered in CA but common elsewhere
4 – Limited distribution (Watch-list)

CRPR Extensions 0.1 – Seriously endangered in California
0.2 – Fairly endangered in California
0.3 – Not very endangered in California

Regulatory Setting

Federal Endangered Species Act (FESA): defines an *endangered species* as "any species or subspecies that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species or subspecies that is likely to become an

endangered species within the foreseeable future throughout all or a significant portion of its range."

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712): FMBTA prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs. Although the USFWS and its parent administration, the U.S. Department of the Interior, have traditionally interpreted the FMBTA as prohibiting incidental as well as intentional "take" of birds, a January 2018 legal opinion issued by the Department of the Interior now states that incidental take of migratory birds while engaging in otherwise lawful activities is permissible under the FMBTA. However, the California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities.

Birds of Prey (CA Fish and Game Code Section 3503.5): Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

Clean Water Act: Section 404 of the Clean Water Act of (1972) is to maintain, restore, and enhance the physical, chemical, and biological integrity of the nation's waters. Under Section 404 of the Clean Water Act, the US Army Corps of Engineers (USACE) regulates discharges of dredged and fill materials into "waters of the United States" (jurisdictional waters). Waters of the US including navigable waters of the United States, interstate waters, tidally influenced waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

California Endangered Species Act (CESA): prohibits the take of any state-listed threatened and endangered species. CESA defines *take* as "any action or attempt to hunt, pursue, catch, capture, or kill any listed species." If the proposed Project results in a take of a listed species, a permit pursuant to Section 2080 of CESA is required from the CDFG.

City of Tulare Oak Tree Ordinance: The City of Tulare has an oak tree ordinance that protects valley oak trees with a diameter at breast height (dbh) of 2 inches or greater. Under this ordinance, removal, or encroachment within the dripline of or damage to valley oak trees is prohibited. Removal requires a permit from the city manager and mitigation either by replacement in-kind or payment of an in-lieu fee to be used for oak tree planting.

City of Tulare General Plan (2035): The City of Tulare General Plan contains the following policies related to the preservation of biological resources that may be considered relevant to the proposed Project's environmental review:

- **COS-P2.1 Protection of Rare and Endangered Species.** The City shall support preservation, restoration, and enhancement of designated habitats of State or federally listed rare, threatened, endangered and/or other sensitive and special status species.
- **COS-P2.2 Protection of Natural Areas.** The City shall support preservation, maintenance, restoration, and enhancement of natural systems, waterways, and open space.
- **COS-P2.3 Development in Environmentally Sensitive Areas.** The City shall require careful planning of new development in environmentally sensitive habitat areas and to avoid or otherwise mitigate potential significant impacts whenever feasible. The focus of efforts shall be on Project design to avoid impacts whenever feasible. Environmentally sensitive habitat shall include, at a minimum, the following:
    - Any habitat for a federally- or State-listed rare, threatened, or endangered animal or plant; and
    - Identifiable wildlife movement corridors, including, but not limited to, non-fragmented stream environment zones, and avian and mammalian migratory routes.
- **COS-P2.4 Site Planning.** The City shall encourage site planning that incorporates and protects creek and wetland edges.
- **COS-P2.6 Planting of Native Vegetation.** The City shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

Discussion

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish & Game or U.S. fish and Wildlife Service?

Less Than Significant Impact with Mitigation Incorporation: The Biological Resource Assessment (Attachment B) conducted for the proposed Project found that burrowing owl has a high potential to occur in the Project Area based on potential open ground with ground squirrel burrows present, abundant foraging field habitat, and previous CNDDB occurrences near the Project area. San Joaquin kit fox, Swainson's hawk, western mastiff bat, and western pond turtle have low potential to occur in the Project area. During the site visit, there were no observations of special-status plant or wildlife species. All 140.32 acres of the Project area is a bare dirt fallow agricultural field dominated by non-native annual grasses or ruderal weeds as well as potted blueberries with farm laborers present on site, who were cultivating the fields during the Habitat Assessment. Three bird boxes were observed on power pole lines; two were outside the Project area and one was found in the middle of the Project area near the irrigation pump station. Several small mammal burrows were observed within the fallow field where millet-rice was harvested and along the unpaved dirt roads throughout the property. Most of the small mammal burrows were located on the south boundary of the Project area on the unpaved roads next to an orchard and single-family residential buildings. The ground is relatively flat and cleared to the surface.

The survey was conducted by a qualified biologist outside of the blooming period for most of the sensitive plant species listed in the CNPS query. However, no special-status plant species were seen within or in the vicinity of the Project area, and conditions for these species do not appear to be conducive, due to active agriculture uses and the loss of a native seed bank from regular agricultural activity over decades of time (since before the 1980's per Google Earth historic photos).

The Tulare Colony Ditch is shown aerially through Google Earth and is mapped in the National Wetland Inventory. This ditch is shown along the north boundary of the Project area, but during the Habitat Assessment, no visible sign of the Tulare Colony Ditch was seen. The only evidence of the Tulare Colony Ditch in the Project area is in the middle of the Project area where a mud-lined agricultural irrigation pump pond occurs. The pond held water and half of the pond was covered in broadleaf cattail. The presence of wetland vegetation may provide suitable habitat for the western pond turtle (*Actinemys marmorata*), but due to the level of disturbance of the surrounding area, the potential for occurrence is low.

Based on the findings of the site survey, historic aerial photos, and a review of the CNDDB, the San Joaquin kit fox, Swainson's hawk, western mastiff bat, and the western pond turtle have a low potential of occurrence due to a lack of suitable habitat on the site. However,

there is a high potential of occurrence for the burrowing owl due to the presence of suitable habitat. In order to avoid and reduce impacts to special status species, Mitigation Measures BIO-1, BIO-1a, BIO-1b, and BIO-1c will be implemented and will ensure that impacts are rendered *less than significant with mitigation incorporation.*

b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Less than Significant Impact: There are no CNDDB-designated "natural communities of special concern" recorded within the proposed Project area or surrounding lands. The Tulare County General Plan identifies Grasslands, Valley Oak Riparian Woodland, Valley Oak Woodland, Vernal Pools, and Wetlands as vegetation communities to protect in the region. The nearest sensitive natural community or riparian is the Elk Bayou, which is approximately 3.94 miles south of the Project site. The Elk Bayou contains various wetland habitats including riverine, freshwater forested/shrub wetland and freshwater emergent wetland. No large native oak trees, heritage trees or riparian community occur in the Project Area. The area has minimal landscape and ruderal vegetation and has been used for active agricultural purposes over a long period of time. The impact is *less than significant.*

c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?

No Impact: A partially vegetated pump pond and maintained irrigation ditch, the Tulare Colony Ditch, occurs in the northern portion of the site. This agricultural ditch occurs on the property along a portion of the eastern side and the entire northern boundary, and it has been diverted underground. The irrigation pump pond associated with this ditch has open water and broadleaf cattail (*Typha latifolia*) vegetation in part of it which could provide basking areas for western pond turtle. The agricultural ditch connects and continues through the irrigation pump pond and connects to other irrigation water ditches offsite to the north and west. This agricultural ditch and the affiliated irrigation pump pond are not considered jurisdictional features under the Clean Water Act.

This agricultural ditch and the affiliated irrigation pump pond is not considered under the Clean Water Act, since both are artificial features that are used exclusively for agricultural activities, and their hydrologic presence is neither permanent nor continuous. The irrigation pump pond does not meet the significant nexus requirement for a connection to a larger navigable body of water, nor would it be considered Waters of the United States according to 33 CFR 328.3(b)(5). In order for a wetland to have a "significant nexus", to a traditional navigable water, the wetland must, either alone or in combination with similarly situated lands, can significantly affect the chemical, physical, and biological integrity of traditional navigable waters. Additionally, the irrigation pump pond proposed to be filled is not

considered "Waters of the United States". Therefore, the proposed activity is not prohibited or regulated under Section 404 of the Clean Water Act. Additionally, the qualified biologist found no evidence of marsh, vernal pool, or coastal communities. No potentially jurisdictional wetlands occur in the Project Area, the Project will have *no impact.*

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?

Less than Significant Impact: The proposed Project area is surrounded by cultivated agricultural lands, residential development, and paved roads. Therefore, the proposed Project area does not contain features that would be likely to function as a wildlife movement corridor. The Project will, however, cause permanent impacts to active agricultural land in the Project Area. The Project Area contains a bird box, a fallow field of irrigated row crops and several unpaved dirt roads with numerous small mammal burrows. Potential wildlife resources the Project could impact would be aquatic species dependent on the proximity to land such as the western pond turtle, burrowing species such as burrowing owls, open foraging bird species such as Swainson's hawk, and terrestrial species such as San Joaquin kit fox, that may forage and disperse over the property with its ground squirrel burrows. Impacts would include reduction in nesting, foraging and dispersal habitat due to the removal and loss of open agricultural land with its resources such as unpaved dirt roads and an irrigation pump pond.

Although some impacts may occur as a result of loss of habitat and foraging grounds, the movement of native resident or migratory fish or wildlife species will not be disrupted as a result of the Project. There are no waterways or areas that could service as a corridor for migratory fish or other aquatic species, and the site is too disturbed to serve as a terrestrial corridor for wildlife. Additionally, the area has not been considered an Essential Connectivity Area (ECA) by the California Department of Fish and Wildlife (CDFW Open Data 2021). The site is unsuitable as a native resident or migratory wildlife corridor or a native wildlife nursery site due to decades of intensive agricultural land use and the proximity to residential development.

Since there are no aquatic or terrestrial wildlife corridors or native wildlife nurseries on the Project site, the impact of the proposed Project on this resource is *less than significant.*

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact: No large oak trees or heritage trees occur in the cleared agricultural fields of the Project Area. The Project does not conflict with local policies or ordinances protecting biological resources. There will be *no impact.*

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?

No Impact: There are no known habitat conservation plans or Natural Community Conservation Plans (NCCP) in the proposed Project area. There would be *no impact.*

Mitigation Measures:

Mitigation Measure 1: Swainson's Hawk Nesting Habitat

A. Protocol Surveys: If construction, grading, or project-related improvements are to commence between March 1 and September 15, a qualified biologist with expertise in Swainson's hawk shall conduct protocol surveys of potential nesting habitat within 0.5 mile of any ground disturbing activities prior to initiation of such activities. Protocol level surveys shall be conducted in conformance with the "Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern," (https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds) (June 2, 2010) hereby incorporated by references. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes and observations, and timing of surveys. If construction work begins after September 15 and ends before March 1 (outside of the breeding season), impacts to the Swainson's hawk would be avoided. Surveys would not be required for work conducted during this part of the year.

A written report with the pre-construction survey results must be provided to the Planning Department and CDFW within 30 days prior to commencement of construction-related activities. The report shall include: the date of the report, authors, and affiliations, contact information, introduction, methods, study location, including map, results, discussion, and literature cited.

B. Nest Avoidance. If the required protocol surveys show there are no active nests within 0.5-mile of construction activities, then no additional mitigation for nest disturbance will be required. If nesting Swainson's hawks are observed within 0.5-mile of the project site, the project applicant must implement CDFW pre- approved mitigation measures to avoid nest impacts during construction. These measures include:

1. All project-related activities with the potential to cause nest abandonment or forced fledging of young shall be avoided until the young have *fledged*.
2. If disturbances, habitat conversions, or other project-related activities, that may cause nest abandonment or forced fledging, are necessary, within the nest protection buffer zone (0.5-mile), monitoring of the nest site by a qualified raptor biologist, funded by the project applicant, shall be required, to determine if the nest is abandoned. If the nest is abandoned, but the nestlings are still alive, the project proponent is required to fund the recovery and hacking, that is the controlled release of captive reared young, of the nestling.
3. The project applicant shall be required to coordinate with CDFW to determine if project activities with the potential to cause disturbance to nesting Swainson's hawks within the 0.5-mile buffer may proceed with a reduced nest buffer and an approved biological monitor. CDFW may authorize a reduced nest buffer with the presence of a monitoring biologist during construction activities to ensure that he nest is not disturbed.
4. Routine disturbances such as agricultural activities, commuter traffic, and routine maintenance activities within 0.5-mile of an active nest are not prohibited.

C. Foraging Impacts: Generally, CDFW requires mitigation for foraging habitat based on the presence of active nests within 10 miles of the project. If an active nest site is identified within ten miles of the project site, the project proponent will be required by CDFW to provide off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the project site.

Mitigation Measure 2A: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den Survey: If project-related activities are scheduled between February 1 to August 31 (the typical nesting_season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14)_calendar days prior to the beginning of Project-related activities. The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the_Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox_dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.

Mitigation Measure 2B: Active Nests or Roosts or Burrows or Dens

If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding

nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

If an occupied burrowing owl burrow is located the Biologist will consult with CDFW to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair.

If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.

Mitigation Measure 3: Project Delay
If a lapse in project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.

IV. CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☑	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☑	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☑	☐	☐

A Phase 1 cultural resources assessment for the FNC Farming Housing Subdivision was conducted by SOAR Environmental (Attachment C). The Project proposes to construct 556 single-family housing units, a community park/pond and a rural residential zone (undeveloped) on a total of 140.32-acres: Accessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010.

Environmental Setting

The Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and located between the Kings River and the north shore of Tulare Lake. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Project area is likely within the Telamni Yokuts territory. The main village for this area was Waitatshuulul, which was approximately 7 miles north of the Project site along Packwood Creek.

The San Joaquin Valley did not experience contact with Europeans until the late 1700s. The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 a group known as the Catalonian Volunteers entered the valley through Tejon Pass in search of deserters from the Southern California Missions. However, the group only made it as far north as Buena Vista Lake in modern day Kern County before turning around due to the extensive swamps. The initial settlement within the valley by Europeans in the 1830s was largely either by trappers or horse thieves. With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state, and Tulare County was established in 1853. Visalia, founded in 1852, is one of the oldest cities in the Southern San Joaquin Valley. During the first few decades, Visalia was a supply center for nearby gold rushes, and had an agricultural economy based on livestock and some agriculture.

Cultural Records Search

The Project area is located in the USGS Tulare 7.5' Series Quadrangle (USGS 2021). On December 5, 2023, SOAR Environmental submitted a records search request to the Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield (Attachment C). The records search included a 0.5-mile buffer around the Project area. The results from the records search indicate two (2) cultural resource studies have been conducted within the Project area, with one (1) negative result cultural resource study outside the edge of the far south-west corner of the Project area. According to the information on file, there are no resources within the Project area. There are two (2) recorded resources within the 0.5-mile record search radius. There were four (4) reports identified within a 0.5-mile radius of the Project area. There are no recorded cultural resources within the Project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks. Both are historic-era structures, a railroad branch line and a district canal. In addition to the SSJVIC research, SOAR Environmental further reviewed the cultural resources 0.5-miles from the Project boundary. Using Google Earth aerial maps, the historic railroad branch was determined the majority of the track, ties, and ballast from the Atchison, Topeka, and Santa Fe Railway were removed from the branch lines on the east side of the San Joaquin Valley in the early 1990s.

Native American Consultation

The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)).

In accordance with the Tribal Consultation Guidelines and SB 18, government to government consultation between local governments and Native American tribes prior to the adoption or amendment of a general plan is required. Additionally, California PRC § 5024 requires consultation with the Office of Historic Preservation (OHP) when a project may impact historical resources located on State-owned land. California State law (SB 18) requires cities and counties to notify and consult with California Native American Tribes about proposed local land use planning decisions for the purpose of protecting Traditional Tribal Cultural Places ("cultural places").

Pursuant to AB 52 guidelines, Native American Tribes that could potentially be impacted by the Project were contacted. The tribes that were formally noticed of this Project were the Santa Rosa Rancheria Tachi Yokut Tribe of the Southern Valley Yokut, Tule River Indian Tribe of the Yokut, and the Wuksachi Indian Tribe and Eshom Valley Band of the Foothill Yokut and Mono. These Rancherias are not located within the City limits.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

Soar Environmental did not receive comments from the Tulare County Native American groups or affiliated individuals regarding the proposed development at the project location.

Regulatory Setting

In this report "cultural resources" are defined as prehistoric or historical archaeological sites as well as historical objects, buildings, or structures. In accordance with 30 Code of Federal Regulations (CFR) §60.4, "historical" in this report applies to cultural resources which are at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state level in the California Register of Historical Resources (CRHR), or at the federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called "historical resources" (California Code of Regulations [CCR] 15064.5[a]). Under this statue the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for inclusion in the NRHP are deemed "historic properties."

National Historic Preservation Act

The National Historic Preservation Act was adopted in 1966 to preserve historic and archeological sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

California Register of Historical Resources

In California, the term "historical resource" includes "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political,

military, or cultural annals of California" (California PRC § 5020.1[j]) (State of California 2021). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California PRC § 5024.1(a)). The criteria for listing resources on the CRHR, enumerated in the following text, were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to California PRC § 5024.1(c) (1– 4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places (NRHP), and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

Tulare County General Plan (2012)

Chapter 8.6 of the Tulare County General Plan of 2012 promotes the preservation of cultural and historic resources through managing and protecting sites of cultural and archeological importance for the benefit of present and future generations (County of Tulare 2012).

The following policies are outlined for the preservation of cultural resources:

ERM-6.1 Evaluation of Cultural and Archaeological Resources
The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.

ERM-6.2 Protection of Resources with Potential State or Federal Designations
The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.

ERM-6.3 Alteration of Sites with Identified Cultural Resources
When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

ERM-6.4 Mitigation
If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival records.

ERM-6.5 Cultural Resources Education Programs
The County should support local, State, and national education programs on cultural and archaeological resources.

ERM-6.6 Historic Structures and Sites
The County shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and parks. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

ERM-6.7 Cooperation of Property Owners
The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.

ERM-6.8 Solicit Input from Local Native Americans
The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

ERM-6.9 Confidentiality of Archaeological Sites
The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

ERM-6.10 Grading Cultural Resources Sites
The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq.

City of Tulare 2035 General Plan

Under Chapter 4, Conservation and Open Space Element, within the General Plan of the City of Tulare states "The General Plan seeks to balance the need for growth with the need for the conservation and enhancement of the area's natural and cultural resources, frequently in cooperation with other agencies." "Cultural resources provide the historical context for the city. The authentic remnants of the city's cultural legacy provide an irreplaceable tangible link to the past. These assets serve as material anchors and their preservation is vital to connecting the present-day community with its historical roots."

The following policies are outlined for the preservation of cultural resources:

Section B.5. Cultural and Archaeological Resources

Goal COS-5 To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.

- **COS-P5.1 Archaeological Resources.** The City shall support efforts to protect and/or recover archaeological resources.
- **COS-P5.2 Evaluation of Historic Resources.** The City shall use appropriate State and Federal standards in evaluating the significance of historical resources that are identified in the city.
- **COS-P5.3 Historic Preservation.** The City shall encourage the preservation of historic residences and neighborhoods wherever appropriate.

- **COS-P5.4 Historic Buildings.** The City shall encourage the preservation and adaptive use of historic buildings, particularly downtown.
- **COS-P5.5 Historic Structures and Sites.** The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and districts. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Building.
- **COS-P5.6 Protection of Resources with Potential State or Federal Designations.** The City shall encourage the protection of cultural and archaeological sites with potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.
- **COS-P5.7 State Historic Building Code.** The City shall utilize the State Historic Building Code for designated properties.
- **COS-P5.8 Design Compatibility with Historic Structures.** The City shall ensure design compatibility of new development within close proximity to designated historic structures and neighborhoods.
- **COS-P5.9 Discovery of Archaeological Resources.** In the event that archaeological/ paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist/paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.
- **COS-P5.10 Discovery of Human Remains.** Consistent with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during Project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). If any human remains are discovered or recognized in any location on the Project site, there shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent human remains until:

  - The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and
  - If the remains are of Native American origin, the descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains, and any associated grave goods as provided in Public Resources Code Section 5097.98.
  - The Native American Heritage Commission was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or
  - The landowner or his or her authorized representative rejects any timely recommendations of the descendent, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.
- **COS-P5.11 Impact Mitigation.** If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.
- **COS-P5.12 Mitigation Monitoring for Historical Resources.** The City shall develop standards for monitoring mitigation measures established for the protection of historical *resources* prior to development.
- **COS-P5.13 Alteration of Sites with Identified Cultural Resources.** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of re source, and mitigation measures proposed for any impacts the development may have on the resource.
- **COS-P5.14 Education Program Support.** The City shall support local, state, and national education programs on cultural and archaeological resources.
- **COS-P5.15 Solicit Input from Local Native Americans.** The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- **COS-P5.16 Confidentiality of Archaeological Sites.** The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/ paleontologist shall make recommendations for protection or recovery of the resource.

City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.

- **COS-P5.17 Cooperation of Property Owners.** The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.
- **COS-P5.18 Archaeological Resource Surveys.** Prior to Project approval, the City shall require Project applicant to have a qualified archaeologist conduct the following activities: (1) conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories, (2) conduct field surveys where appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

Discussion

a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to in Section 15064.5?

Less Than Significant Impact with Mitigation: A records search was conducted on behalf of the Applicant from the SSJVIC of the CHRIS at California State University in Bakersfield, California, to determine if historical or archaeological sites had previously been recorded within the study area, if the Project area had been systematically surveyed by archaeologists prior to the initial study, and/or whether the region of the field Project was known to contain archaeological sites and to thereby be archaeologically sensitive.

Soar Environmental conducted an intensive pedestrian survey of the Project site on December 16th, 2023. The Intensive Phase I pedestrian survey included parallel transects spaced at 50 feet (15-meter) intervals walked across the entire Project area. This field survey did not find evidence of surface archaeological resources within the Project area. According to the Project's current design, the proposed Project will not impact any known *in situ* archaeological sites or historical resources.

According to the SSJVIC records search, there have been two (2) previous cultural resource studies within the Project area. According to the information on file, there is no known cultural resources within the Project area.

Additionally, there are two (2) recorded resources and four (4) reports identified within the 0.5-mile radius of the Project area. However, there are no recorded cultural resources within the Project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest,

California Inventory of Historic Resources, or the California State Historic Landmarks. Additionally, there are no recorded resources within the Project area that are eligible to be listed on any of the previously mentioned state and federal registers.

Although no significant cultural resources were identified on the site, the presence of remains or unanticipated cultural resources under the ground surface is also possible. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that impacts to this checklist item will be *less than significant with mitigation* incorporation.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant Impact with Mitigation: An intensive Phase I pedestrian survey was conducted on December 16th, 2023, by Soar Environmental Consulting, with parallel transects spaced at 50-foot (15-meter) intervals and walked across the entire Project area. The survey found no evidence of surface archaeological resources or any other known cultural resources. Therefore, the proposed Project will not impact any known *in situ* archaeological sites or historical resources. However, there is always the potential to encounter previously undetected cultural resources. In the case that previously unknown cultural materials are unearthed during construction, implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that potential impact to unknown archeological resources will be *less than significant with mitigation* incorporation.

c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact with Mitigation: There are no known human remains buried in the Project vicinity. If human remains are unearthed during Project construction, there is a potential for a significant impact. As such, implementation of Mitigation Measure CUL-2 will ensure that impacts remain *less than significant with mitigation* incorporation.

Mitigation Measures for Impacts to Cultural Resources

Mitigation Measure CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

V. ENERGY

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	☐	☐	☑	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☑

Environmental Setting

Southern California Edison (SCE) provides electricity services to the City of Tulare. SCE serves approximately 15 million people in a 50,000 square-mile area of Central, Coastal, and Southern California. SCE supplies electricity to its customers through a variety of renewable and nonrenewable sources. Table 7 below shows the proportion of each energy resource sold to California consumers by SCE in 2019 as compared to the statewide average.

Fuel Type		SCE Power Mix	California Power Mix
Coal		0%	2.7%
Large Hydroelectric		7.9%	12.2%
Natural Gas		16.1%	37%
Nuclear		8.2%	9.3%
Other (Oil/Petroleum Coke/Waste Heat)		0.1%	0.2%
Unspecified Sources of Power[1]		32.6%	5.4%
Eligible Renewables	Biomass	0.6%	2.5%
	Geothermal	5.9%	4.9%
	Small Hydro	1%	1.4%
	Solar	16%	13.2%
	Wind	11.5%	11.1%
	Total Eligible Renewable	**35.1%**	**33.1%**
1. "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.			

Table 7. 2019 SCE and 2020 State Power Resources; Source: SCE; California Energy Commission

SCE also offers Green Rate Options, which allow consumers to indirectly purchase up to 100% of their energy from renewable sources. To accomplish this, SCE purchases the renewable energy necessary to meet the needs of Green Rate participants from solar renewable developers. The Project will not use natural gas during its operational phase.

Regulatory Setting

California Code of Regulations, Title 20
Title 20 of the California Code of Regulations establishes standards and requirements for appliance energy efficiency. The standards apply to a broad range of appliances sold in California.

California Code of Regulations, Title 24
Title 24 of the California Code of Regulations is a broad set of standards designed to address the energy efficiency of new and altered homes and commercial buildings. These standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. Title 24 requirements are enforced locally by the City of Selma Building Department.

California Green Building Standards Code (CALGreen)
CalGreen is a mandatory green building code that sets minimum environmental standards for new buildings. It includes standards for volatile organic compound (VOC) emitting materials, water conservation, and construction waste recycling.

SB 100
SB 100, passed in 2018, set a deadline in 2045 for 100% of energy to be renewable. Additionally, by 2030, 60% of all energy must be renewable. California is targeting this goal through solar and other renewable sources.

AB 178
For California to meet its renewable goals, AB 178 was passed in 2018. AB 178 states that starting in 2020 all new low rise residential buildings must be built with solar power.

City of Tulare General Plan
The 2030 General Plan includes the policies related to energy use that correlate to the proposed Project:

- *T-P-41*: Integrate the bicycle transportation system into new development and infill redevelopment. Development shall provide short term bicycle parking and long-term bicycle storage facilities, such as bicycle racks, stocks, and rental bicycle lockers. Development also shall provide safe and convenient bicycle and pedestrian access to high activity land uses such as schools, parks, shopping, employment, and entertainment centers.

- *T-P-53*: Develop flexible parking requirements in the zoning ordinance for development proposals based on "best practices" and the proven potential to reduce parking demand.

Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?

Less Than Significant Impact: The proposed Project includes the construction and operation of 556 units of single-family housing. During Project construction, there would be an increase in energy consumption related to worker trips and the operation of construction equipment. This increase in energy use would be temporary and limited to the greatest extent possible through compliance with local, state, and federal regulations. Vehicle fuel consumption during Project construction was estimated based on the assumed construction schedule, vehicle trip lengths, and the number of workers per construction phase as provided by CalEEMod, and Year 2024 gasoline/diesel MPG factors provided by the EMFAC2021 and EMFAC2017. Detailed energy calculations are provided in Attachment D. To simplify the estimation process, it was assumed that all worker vehicles used gasoline as a fuel source and all off-road equipment, hauling vehicles, and vendor vehicles used diesel as a fuel source. Table 8, below, provides gasoline and diesel fuel used by construction and on-road sources during each phase of Project construction.

Off-Road Equipment Fuel (Diesel)		On-Road Vehicle Fuel				Total MMBTU
		Diesel		Gasoline		
Gallons	MMBTU	Gallons	MMBTU	Gallons	MMBTU	
546,377	75,946	263,077	36,567	352,805	40,957	153,470
					Total Construction Energy Use	153,470
					Average Annual Construction Energy Use	102,313

Table 8. On-Road Mobile Fuel Use Generated by Construction Activities. Source: CalEEMod (v. 2020.4.0); EMFAC2017 (See Attachment D)

While construction of the proposed Project will result in additional energy consumption, this energy use is not unnecessary or inefficient. This energy use is justified by the energy-efficient nature of the proposed Project and would be limited to the greatest extent possible through compliance with local, state, and federal regulations. Once construction is complete, the Project is expected to achieve net zero energy consumption. The proposed Project is subject to the California New Residential Zero Net Energy Action Plan 2015-2020. This plan establishes a goal for all residential buildings built after January 1, 2020, to be zero net energy. The California Energy Commission is responsible for the development and enforcement of specific strategies to achieve this

goal. These strategies are implemented through Title 24, Part 6 of the California Building Code, which requires developers to include certain measures (including solar panels on all new residential buildings) to achieve required building efficiency standards.

Mobile Fuel Use		**Gal/Year**	**MMBTU**
	Gasoline	478,937	57,609
	Diesel	73,728	10,129
Electricity Use		**kWh/Year**	**Total MMBTU**
		8,349,990	28,490
Natural Gas Use		**kBTU/Year**	**Total MMBTU**
		0	0
			Total MMBTU
		Total Operational Energy Use	96,228

Table 9. On-Road Mobile Fuel Use Generated by Operational Activities. Source CalEEMod (v. 2020.4.0); EMFAC2021 (See Attachment D)

As shown in Table 9, annual energy use associated with Project operations would total approximately 96,228 MMBTUs per year. Annual energy use is expected to decrease over time as a result of improvements in vehicle fuel efficiency standards. The proposed Project will be subject to energy conservation requirements in the California Energy Code (24 CCR Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings) and the California Green Building Standards Code (CALGreen) (24 CCR Part 11). Adherence to Title 24 requirements would ensure that the Project would not result in wasteful or inefficient use of non-renewable resources due to building operation or vehicle trips.

Because construction-related energy use would be temporary and limited to the greatest extent feasible through consistency with Federal, State, and local policies related to energy conservation, and operation of the Project will comply with all energy efficiency standards required under Title 24, Section 6, and these standards were specifically developed to achieve net zero energy for residential Projects, it can be presumed that the Project will achieve net zero energy. The proposed construction and operation of single-family homes and a community park would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources. The impact is *less than significant*.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact: The proposed Project will not conflict with or obstruct any state or local plans for renewable energy or energy efficiency. The construction and operation of the Project will comply with applicable energy efficiency regulations included in CALGreen, Title 24, the CARB, and the Tulare General Plan. The proposed Project will comply with all state and local policies related to energy efficiency and there is *no impact*.

VI. GEOLOGY AND SOILS

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

Environmental Setting

Geologic Stability and Seismic Activity

Seismicity: Tulare County is considered to be a low to moderate earthquake hazard area. The San Andreas Fault is the longest and most significant fault zone in California and is

approximately 40 miles west of the Tulare County Boundary. Owens Valley fault zone is the only active fault located within Tulare County. Section 5 of the 2017 Tulare Multi-Jurisdictional Local Hazard Mitigation Plan identifies the Project site as likely to experience low to moderate shaking from earthquakes and may experience higher levels if an earthquake were to occur in or near the County. Ground shaking can result in other geological impacts, including liquefaction, landslides, lateral spreading, subsidence, or collapse.

Liquefaction: Liquefaction is a phenomenon whereby unconsolidated and/or near-saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like behavior of the soil, which can result in landslides and lateral spreading. No specific countywide assessment of liquefaction has been performed; however, the 2017 Tulare Multi-Jurisdictional Local Hazard Mitigation Plan identifies the risk of liquefaction within the county as low because the soil types in the area either too coarse or too high in clay content to be suitable for liquefaction.

Landslides: Landslides refer to a wide variety of processes that result in the downward and outward movement of soil, rock, and vegetation under gravitational influence. Landslides can be caused by both natural and human-induced changes in slope stability and often accompany other natural hazard events, such as floods, wildfire, or earthquake. Eastern portions of the County are considered to be at a higher risk of landslides where steep slopes are present. However, the majority of the County, including the proposed Project site, is considered to be at low risk of landslides and mudslides because of its flat topography. The 2017 Tulare Multi-Jurisdictional Local Hazard Mitigation Plan states that occurrence of landslide events within populated areas of Tulare County is unlikely.

Subsidence: Land Subsidence refers to the vertical sinking of land as a result of either manmade or natural underground voids. Subsidence has occurred throughout the Central Valley at differing rates since the 1920's as a result of groundwater, oil, and gas withdrawal. During drought years, Tulare County is prone to accelerated subsidence, with some areas sinking up to 28 feet. Although western portions of the County show signs of deep and shallow subsidence, the majority of the County, including the proposed Project site, is not considered to be at risk of subsidence related hazards.

Soils Involved in Project

The proposed Project involves construction on two soil types. The properties of the soil are described briefly below:

- **Nord Fine Sandy Loam (0 to 2 percent slopes):** The Nord Fine Sandy Loam series consists of very deep, well drained soils formed in mixed alluvium derived predominantly from granitic and sedimentary rock sources and has slopes of 0 to 2 percent. Nord soils occur on alluvial fans and flood plains. It is well drained; has negligible to low runoff; has moderate permeability but is moderately slow in saline and sodic soil conditions.

- **Hanford Sandy Loam (0 to 2 percent slopes):** The Hanford Sandy Loam series consists of very deep, well-drained soils that formed in moderately coarse textured alluvium and is derived predominantly from granite and has slopes of 0 to 2 percent. Hanford soils occur throughout the San Joaquin Valley and in the valleys of central and southern California. These soils are well drained, with negligible to low runoff, and moderately rapid permeability.

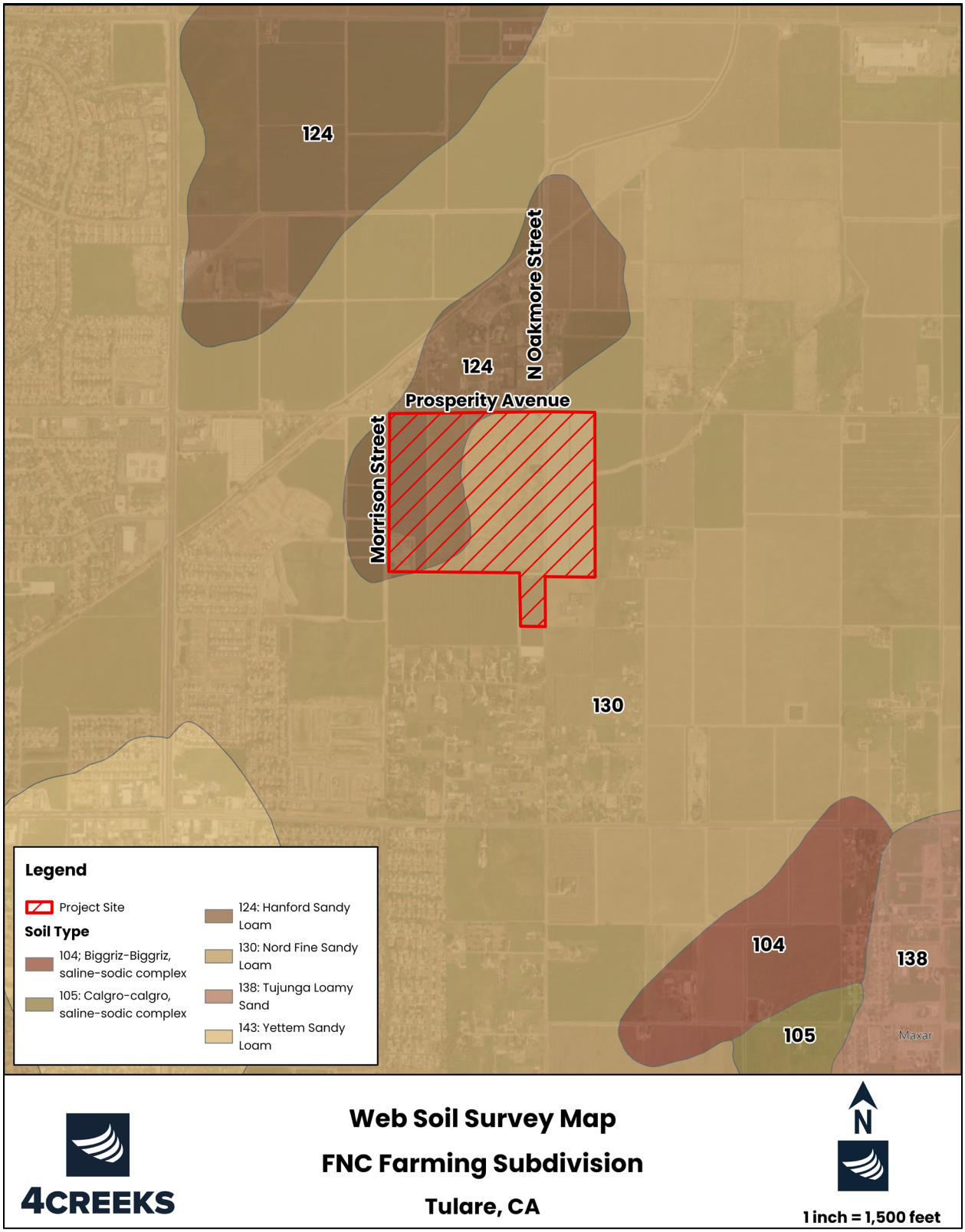

Figure 5: Soils Map

Regulatory Setting

California Building Code
The California Building Code (CBC) contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures and certain equipment.

City of Tulare Municipal Code (California Building Code)
The City of Tulare Municipal Code has incorporated and adopted the CBC, 2013 Edition, as promulgated by the California Building Standards Commission, which incorporates the adoption of the 2012 edition of the of the International Building Code, as amended with necessary California amendments and the 2012 International Building Code of the International Code Council.

City of Tulare General Plan: The Safety Element of the City of Tulare General Plan includes the following goals and policies regarding soils and geology.

- SAF-P1.4 Building and Codes. Except as otherwise allowed by State law, the City shall ensure that all new buildings intended for human habitation are designed in compliance with the latest edition of the California Building Code, California Fire Code, and other adopted standards based on risk (e.g., seismic hazards, flooding), type of occupancy, and location (e.g., floodplain, fault).
- SAF-P1.7 Site Investigations. The City shall require applicants to conduct site investigations in areas planned for new development to determine susceptibility to landslides, subsidence/settlement, contamination, and/or flooding.

Goal SAF-4 To protect people and property from seismic and geotechnical hazards.

- SAF-P4.4 Alquist-Priolo Act Compliance. The City shall not permit any structure for human occupancy to be placed within designated Earthquake Fault Zones (pursuant to and as determined by the Alquist-Priolo Earthquake Fault Zoning Act; Public Resources Code, Chapter 7.5) unless the specific provisions of the Act and Title 14 of the California Code of Regulations have been satisfied.
- SAF-P4.5 Subsidence. The City shall confirm that development is not located in any known areas of active subsidence. If urban development may be located in such an area, a special safety study will be prepared and needed safety measures implemented.

Discussion

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact: According to the Tulare County Multi-Hazard Mitigation Plan, no active faults underlay the Project site. Although the Project is located in an area of relatively low seismic activity, the Project could be affected by ground shaking from nearby faults. The potential for strong seismic ground shaking on the Project site is not a significant environmental concern due to the infrequent seismic activity of the area and distance to the faults. The Project has no potential to cause the rupture of an earthquake fault indirectly or directly. Therefore, the risk of loss, injury or death involving a rupture of a known earthquake fault would be *less than significant.*

ii. Strong seismic ground shaking?

Less than Significant: According to the Tulare County Multi-Jurisdictional Local Hazard Mitigation Plan, the Project site is located in an area of relatively low seismic activity. The proposed Project does not include any activities or components that would indirectly or directly result in loss, injury or death from strong seismic ground shaking, as the Project is in a low-risk area for seismic activity. The impact is *less than significant.*

iii. Seismic-related ground failure, including liquefaction?

No Impact: No specific countywide assessment of liquefaction has been performed; however, the Tulare County Multi-Hazard Mitigation Plan identifies the risk of liquefaction within the county as low because the soil types on the Project site are unsuitable for liquefaction. According to state soils maps, the Project site consists mostly of Nord Fine Sandy Loam and Hanford Sandy Loam which do not contain soils suitable for liquefaction. There is *no impact.*

iv. Landslides?

No Impact: The proposed Project site is generally flat and there are no hill slopes in the area. As a result, there is almost no potential for landslides. No geologic landforms exist on or near the site that would result in a landslide event. There is *no impact.*

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

Less Than Significant Impact: The Project site is relatively flat, so the potential for erosion is low. However, construction-related activities and the addition of impervious surfaces can increase the probability for increased soil erosion and stormwater runoff. Although the construction phase may involve some soil erosion/loss of topsoil, construction-related impacts related to erosion will be temporary and subject to best management practices (BMPs) required by SWPPP. These BMPs are developed to prevent significant impacts related to erosion from construction, so there will be minimal soil loss as a result of construction activities.

The operational phase of the Project is not expected to result in substantial soil erosion or the loss of topsoil. The Project would add impervious surfaces, but sufficient landscaping and a community park are proposed, which will intercept the stormwater runoff that will result from the Project. The planned park is 5.47-acres and includes a 2.64-acre pond. This Project feature as well as the overall Project design will divert all stormwater resulting from the Project to this park and pond, which will prevent substantial soil erosion near the Project site.

Because impacts related to erosion would be temporary and limited to construction, best management practices would prevent significant impacts related to erosion, and the Project proposes features that will intercept stormwater runoff, the impact will remain *less than significant.*

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

No Impact: The soils associated with the Project site are considered stable and have a low capacity for landslides, lateral spreading, subsidence, liquefaction, or collapse. Because the Project area is considered to be stable, and this Project would not result in a substantial grade change to the topography to the point that it would increase the risk of landslides, lateral spreading, subsidence, liquefaction or collapse, there is *no impact.*

d) Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact: The proposed Project site is not in an area with expansive soils. Because the soils associated with the Project do not exhibit shrink swell behavior, implementation of the Project will pose no risk to life or property caused by expansive soils and there is *no impact.*

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact: The proposed Project will have access to existing City wastewater infrastructure and would not require the use of septic tanks or alternative wastewater disposal systems. There is *no impact.*

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact with Mitigation: A qualified archaeologist at Soar Environmental Consulting completed a Phase I Cultural Resources Assessment (Attachment C) which included an archival review, Native American consultation, and an intensive pedestrian survey. The archival review included a records search from the Southern San Joaquin Valley Information Center (SSJVIC) and NAHC's Sacred Lands File (SLF). Archival research, Native American consultation and the pedestrian survey did not indicate any known in situ archaeological sites, geological features, paleontological resources, historical resources, or sacred sites.

However, there is always the possibility that paleontological and geologic resources may exist below the ground surface. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that any impacts resulting from Project implementation remain *less than significant with mitigation incorporation.*

Mitigation Measures for Impacts to Geological Resources

Mitigation Measure CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

VII. GREENHOUSE GAS EMISSIONS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	☑	☐	☐	☐
a) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☑	☐	☐	☐

Environmental Setting

Natural processes and human activities emit greenhouse gases, which drive climate change processes. The presence of GHGs in the atmosphere affects the earth's temperature and overall climate through a process known as the "greenhouse effect". The greenhouse effect is the process through which heat is trapped near the Earth's surface due to the build-up of greenhouse gases in the atmosphere. Greenhouse gases absorb infrared radiation from the sun in the form of heat, with certain gaseous compounds having a higher heat-holding capacity than others, which is known as its global warming potential (GWP). Without the natural heat-trapping effect of GHGs, the earth's surface would be about 33°C cooler. However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations, driving climate change processes. Climate change refers to a significant change in measures of climate, including temperature, precipitation, or wind patterns, which last for an extended period of time. (British Geological Survey, n.d.)

Common GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur, and hexafluoride. The Global Warming Potential (GWP) has been calculated for each greenhouse gas to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to global warming. For example, one pound of methane is equivalent to twenty-one pounds of carbon dioxide.

GHGs as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs as defined by AB 32 are summarized in Table 10. Each gas's effect on climate change depends on three main factors.

The first being the quantity of these gases are in the atmosphere, followed by how long they stay in the atmosphere and finally how strongly they impact global temperatures.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Methane (CH4)	Flammable gas; main component of natural gas	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
Carbon dioxide (CO2)	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees, and wood products, and also as a result of certain chemical reactions (e.g., manufacturing of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is assimilated by plants and soil as part of the biological carbon cycle.
Chloro-fluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable, insoluble and chemically unreactive in the troposphere.	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone and have been phased out of production.
Hydro-fluorocarbons	A man-made greenhouse gas. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine an at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities because they are potent greenhouse gases.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Nitrous oxide (N2O)	Commonly known as laughing gas, is a chemical compound with the formula N2O. It is an oxide of nitrogen. At room temperature, it is a colorless, non-flammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects.	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Pre-fluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60 kilometers above Earth's surface.	50,000 years	6,500 to 9,200	Two main sources of pre-fluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

Table 10. Greenhouse Gases; Source: EPA, Intergovernmental Panel on Climate Change

The quantity of a particular gas present in the air is known as its concentration, or abundance, which is measures in parts per million, parts per billion, and parts per trillion. One part per million is equivalent to one drop of water diluted into approximately 13 gallons of water, which is roughly equivalent to a full tank of gas in a compact car. Therefore, it can be assumed larger emissions of greenhouse gases lead to a higher concentration in the atmosphere. Each of the greenhouse gases described above can reside in the atmosphere for varying amounts of time, ranging from a few years to thousands of years. All these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world regardless of the source of the emission.

Regulatory Setting

Senate Bill (SB) 32

Governor Brown signed Senate Bill (SB) 32 on September 8, 2016, which contains the goal to reduce the State's carbon emissions by 40 percent below 1990 levels by the year 2030. The California Air Resources Board (CARB) adopted the target set by SB 32 and provided a comprehensive strategy towards achieving the 2030 target and new emission inventories in their newly adopted 2017 Scoping Plan.

SB 1078, SB 107, and Executive Order S-14-08

SB 1078, SB 107, and Executive Order S-14-08 require California to generate 20% of its electricity from renewable energy by 2017. SB 107 then changes the 2017 deadline to 2010. Executive Order S-14-08 required that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

San Joaquin Valley Air Pollution Control District

SJVAPCD adopted a Climate Change Action Plan (CCAP) in August 2008. While the plan does not have regulatory powers, it directs SJVAPCD to develop guidance to assist District staff, valley businesses, land-use agencies, and other permitting agencies in addressing GHG emissions as part of the CEQA process.

Tulare County Climate Action Plan (CAP) (2018)

The Tulare County Climate Action Plan (CAP) includes a baseline and future year GHG emissions inventories to incorporate the County's strategy to address the 2030 target outlined in SB 32. The 2030 target requires the State to reduce emissions by 40% below 1990 levels. The CAP identifies the County's reduction measures that are required to maintain consistency with the State's target. The plan includes Tulare County's GHG inventory, emission reduction targets to demonstrate alignment with AB 32 and the CARB Scoping Plan, the CAP strategy for achieving emissions reduction targets, and a plan for tracking and monitoring progress in implementing the CAP.

City of Tulare Climate Action Plan (2011)

The City of Tulare Climate Action Plan (Plan) demonstrates the City's commitment to reducing GHG emissions and remaining consistent with the State's GHG emission reduction targets. The City aims to achieve the State-recommended GHG emission reduction target of 15% from baseline by the year 2020 as well as achieve the 2050 state targets associated with Governor's Order S-03-05. In 2010, a GHG emissions inventory was prepared to quantify the amount of GHG emissions produced from government operations and community-wide activities which includes transportation, waste, agriculture, energy, and aircraft related activities. The Plan also outlines GHG reduction measures in the energy use, water use, transportation, land use, solid waste, and agriculture sectors. In addition to reduction measures, the Plan includes long-term adaptations to the risks associated with climate change to mitigate the impacts of climate change on the community.

Discussion

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

Less than Significant Impact:

Construction:

Greenhouse gases would be generated during construction from activities including site preparation, grading, building construction, application of architectural coatings, and paving. The CalEEMod Emissions report predicts that this Project will create a maximum of 786.15 MT of CO2e emissions per year during construction. Because the SJVAPCD does not have numeric thresholds for assessing the significance of construction related GHG emissions, predicted emissions from Project construction were compared to SCAQMD thresholds for construction related GHG emissions. The SCAQMD currently has a threshold of 10,000 metric tons of CO2e per year for construction emissions amortized over a 30-year Project lifetime. Because Project construction would generate less GHG emissions than this threshold, impacts related to GHG emissions during Project construction would be *less than significant.*

Operation:

The proposed Project would have the following operational emissions:

- CO2: 6,564 metric tons per year
- CH4: 8.39 metric tons per year
- N2O: 0.3014 metric tons per year
- CO2e: 6,863 metric tons per year (combined CO2, CH4, and N2O emissions)

The SJVAPCD has not formally provided guidance on how to analyze GHG emissions impacts for projects within their San Joaquin Valley Air Basin (SJVAB). Until such time as SJVAPCD provides formal guidance, the following alternative metrics used by air districts in California to assess GHG emissions impacts have been identified:

Bright-Line Numeric Threshold: The bright-line significance threshold is a numeric, mass emissions threshold. In general, the bright-line threshold identifies the point at which additional analysis of project-related GHG emissions impacts is necessary. Projects below the established bright-line significance criteria have a de minimis contribution to the local, regional, and/or statewide GHG emissions inventory and have less than significant impacts. Projects above this threshold may result in a substantial increase in GHG emissions.

The bright-line threshold is based on the methodology identified in the 2008 CAPCOA white paper (CAPCOA 2008). It is a market capture approach, reflecting the amount of emissions that 90 percent of development projects surveyed in four cities within California would generate. CAPCOA identified that a bright-line threshold set at 900 metric tons of CO2e per year would capture 90 percent of projects. In general, 900 metric tons of CO2e per year corresponds to (1) a residential development of 50 dwelling units; (2) 35,000 square feet of office space; (3) 11,000 square feet of retail space; and (4) 6,300 square feet of supermarket space.

The 900 metric tons of CO2e per year is used as it is the most conservative bright line threshold. Exceeding the bright-line significance criterion does not necessarily indicate that the project generates a significant unavoidable impact. Consistent with how the bright-line threshold is applied in other air districts, this analysis utilizes the bright-line thresholds as a screening criterion to identify whether a full analysis of GHG emissions is warranted. If the project exceeds the screening threshold, the second level of analysis will compare the project to the efficiency metric discussed below.

Efficiency-Based Threshold for Residential Projects: The efficiency metric identified by some air districts in California in the absence of a county-wide GHG reduction plan is derived from CARB's Scoping Plan. Residential projects that are over the bright line threshold would not be considered significant if their overall GHG efficiency is less than 6.7 MT CO2e/yr/capita. However, it is noted that this threshold is based, in part, on the GHG reducing target established for the year 2020 under AB 32, but the Project would be implemented after the year 2020. Statewide goals for GHG reductions in the years beyond 2020 were codified into state law with the passage of SB 32, which as described previously mandates that California achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. This equates to 40 percent below the statewide GHG reduction target for the year 2020. Therefore, a 40% reduction would be: 6.7 MT CO2e/yr/capita x 60% = 4.02 MT CO2e/yr/capita.

For this Project: The average household size in the City of Tulare is 3.2 persons (US Census Bureau 2024). The Project consists of up to 564 units, leading to an estimated population of:

564 × 3.47 = 1,957 people.

Using the efficiency-based threshold: The allowable emissions for this residential Project would be 1,957 × 4.02 = 7,867 metric tons of CO2e per year.

The total operational GHG emissions amount to 6,863 metric tons of CO2e per year. Since the Project's emissions are below the efficiency-based threshold for residential projects (7,867 metric tons of CO2e per year), the Project's operational GHG emissions are considered *less than significant.*

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

Potentially Significant Impact: As the Project would have the potential to emit significant levels of GHGs, the EIR will include further evaluation of Project-related emissions and associated emissions reduction strategies to determine whether the Project conflicts with an applicable plan, police, or regulation adopted for the purpose of reducing GHG emissions. The impact is *potentially significant.*

VIII. HAZARDS AND HAZARDOUS MATERIALS

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

Environmental Setting

The proposed Project site is located approximately 1.2 miles east of the nearest school (Live Oak Middle School), 3.35 miles northeast of the nearest private airstrip (SCE San Joaquin Heliport – 65C), and approximately 4.83 miles north of the nearest public airport (Mefford Field Airport). The Department of Toxic Substances Control's (DTSC's) Envirostor was used to identify

any sites known to be associated with releases of hazardous materials or wastes within the Project area. This research confirmed that the Project would not be located on or near a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Regulatory Setting

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S. Code [U.S.C.] §9601 et seq.).

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or the Superfund Act) authorizes the President to respond to releases or threatened releases of hazardous substances into the environment.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) sets and enforces Occupational Safety and Health Standards to assure safe working conditions. OSHA provides training, outreach, education, and compliance assistance to promote safe workplaces. The proposed Project would be subject to OSHA requirements during construction, operation, and maintenance.

Toxic Substances Control Act of 1976 (15 U.S.C. §2601 et seq.).

The Toxic Substance Control Act was enacted by Congress in 1976 and authorizes the EPA to regulate any chemical substances determined to cause an unreasonable risk to public health or the environment.

Hazardous Waste Control Law, Title 26.

The Hazardous Waste Control Law creates hazardous waste management program requirements. The law is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which contains requirements for the following aspects of hazardous waste management:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

California Code of Regulations, Title 22, Chapter 11.

Title 22 of the California Code of Regulations contains regulations for the identification and classification of hazardous wastes. The CCR defines a waste as hazardous if it has any of the following characteristics: ignitability, corrosivity, reactivity, and/or toxicity.

California Emergency Services Act

The California Emergency Services Act created a multi-agency emergency response plan for the state of California. The Act coordinates various agencies, including CalEPA, Caltrans, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

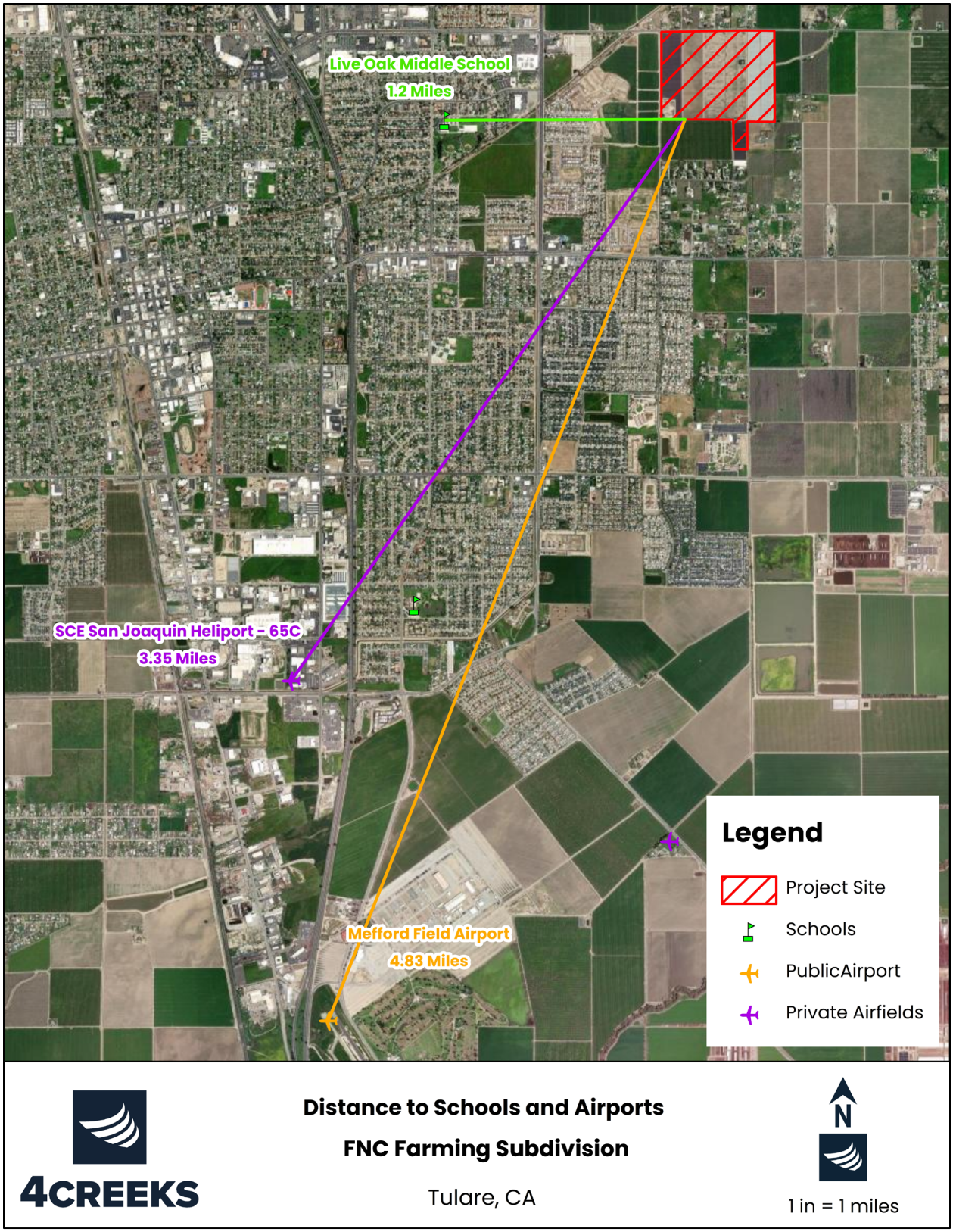

Figure 6: Distance to Schools and Airports Map

Discussion

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

Less than Significant Impact with Mitigation: Project construction activities may involve the use, storage, and transport of hazardous materials. During construction, the contractor will use fuel trucks to refuel onsite equipment and may use paints and solvents to a limited degree. The storage, transport, and use of these materials will comply with Local, State, and Federal regulatory requirements. There is the potential for small leaks due to refueling of construction equipment, however standard construction Best Management Practices (BMPs) included in the SWPPP will reduce the potential for the release of construction related fuels and other hazardous materials by controlling runoff from the site and requiring proper disposal or recycling of hazardous materials.

Additionally, the Department of Toxic Substances Control (DTSC) has identified various types of pesticides that may be categorized as hazardous waste on sites that have been used for agricultural purposes. Therefore, soils on the Project site may be contaminated with pesticides that may be harmful to future residents. Implementation of Mitigation Measure HAZ-1 will ensure that soils are properly analyzed prior to Project construction and that hazardous wastes are not unintentionally transported during Project construction. The impact is *less than significant with mitigation.*

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact: There is no reasonably foreseeable condition or incident involving the Project that could result in release of hazardous materials into the environment, other than any potential accidental releases of standard fuels, solvents, or chemicals encountered during typical construction of a residential subdivision. Should an accidental hazardous release occur or should the Project encounter hazardous soils, existing regulations for handling hazardous materials require coordination with the California Department of Toxic Substances Control for an appropriate plan of action, which can include studies or testing to determine the nature and extent of contamination, as well as handling and proper disposal. Therefore, potential impacts are *less than significant*.

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

No Impact: The Project is located approximately 1.2 miles from an existing middle school (Live Oak Middle School). The Project does not involve the use or storage of hazardous

substances other than insignificant amounts of pesticides, fertilizers, and cleaning agents required for normal maintenance of structures and landscaping. The Project would not emit hazardous emissions or involve the handling of hazardous materials or waste. Therefore, there would be *no impact*.

d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact: The Project site is not listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. There would be *no impact.*

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?

Less Than Significant Impact: The proposed Project is located approximately 4.83 miles north of the nearest public airport (Mefford Field Airport). However, according to the Tulare County Airport Master plan, the Project site would not be impacted by the airport. Noise contours developed for 2019 show that the airport would produce less than 65 dB. All land uses located outside of the 65 dB contours are considered less than significant. Implementation of the proposed Project would not result in a safety hazard for people residing or working in the Project area, as the Project is outside of the airport influence area. There is *a less than significant impact.*

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact: The City's site plan review and environmental review procedures shall ensure compliance with emergency response and evacuation plans. In addition, the site plan will be reviewed by the Fire Department per standard City procedure to ensure consistency with emergency response and evacuation needs. Therefore, the proposed Project would have *no impact* on emergency evacuation.

g) Would the Project expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?

No Impact: The land surrounding the Project site is developed with urban uses and farmlands which are not considered to be wildlands. Additionally, the City of Tulare General

Plan finds that fire hazards within the Planning Area, including the proposed Project site, have low frequency, limited extent, limited magnitude, and low significance. The proposed Project would not expose people or structures to significant risk of loss, injury or death involving wildland fires and there is *no impact.*

Mitigation Measures:

HAZ-1 Soil Sampling: Prior to the commencement of construction activities, the Project site must undergo soil sampling conducted by a qualified environmental consultant. A Soil Sampling and Analysis Plan (SSAP) will be developed and approved by the relevant regulatory agency. Soil samples will be collected and analyzed for contaminants, and the results will be compared to DTSC thresholds. If contamination is found, a Remediation Plan will be implemented to address the issue before construction begins. All activities will be documented and clearance from the regulatory agency must be obtained before proceeding with construction.

IX. HYDROLOGY AND WATER QUALITY

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

Environmental Setting

Hydrologic System: The proposed Project site is in the Tulare Lake Hydrologic Region, which covers 10.9 million acres south of the San Joaquin River. The proposed Project site lies within the San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Basin is divided into seven sub-basins. The proposed Project site is located within the Kaweah Subbasin. The subbasin lies between the Kings Groundwater Subbasin on the north, the Tule Groundwater Subbasin on the south, the Tulare Lake subbasin on the west, and crystalline

bedrock of the Sierra Nevada foothills on the east. The area is comprised mostly of lands in the Kaweah Delta Water Conservation District. Major rivers in the subbasin include the St. Johns and lower Kaweah Rivers, although the Kaweah River is considered the primary surface water source for groundwater recharge.

Groundwater: The City of Tulare water system consists of 23 active wells, a 125,000-gallon water storage tower, two-2-million-gallon concrete storage tanks, one - 1.5-million-gallon concrete storage tank, 7 well sites with granulated activated carbon (GAC) treatment filters, 277 miles of water transmission and distribution mains, and over 2,500 fire hydrants. The city's water supply comes from a series of deep groundwater wells scattered throughout the city and pumped into an interconnected water system. Additionally, the City of Tulare, City of Visalia, and the Tulare Irrigation District have joined a Joint Power Authority (JPA) Agreement to form the Mid-Kaweah Groundwater Sustainability Agency (GSA). The JPA states the Board of Directors is responsible for the development, adoption, and implementation of a Groundwater Sustainability Plan as required by the Sustainable Groundwater Management Act of 2014. There is an existing City well that borders the Project site.

Surface Waters: None of the City's potable water is supplied through surface water. However, the City of Tulare does purchase surface water from the Tulare Irrigation District to be used for groundwater recharge.

Regulatory Setting

Clean Water Act

The Clean Water Act (CWA) is enforced by the U.S. EPA and was developed in 1972 to regulate discharges of pollutants into the waters of the United States. The Act made it unlawful to discharge any pollutant from a point source into navigable waters unless a National Pollution Discharge Elimination System (NPDES) Permit is obtained.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from, and mitigating against disasters. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that aid with mitigating future damages from natural hazards.

California Water Quality Porter-Cologne Act

California's primary statute leading water quality and water pollution concerns with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the nine Regional Water Quality Boards (RWQCB) power to protect water quality and further develop the Clean Water Act within California. The applicable RWQCB for the proposed Project is the Central Valley RWQCB.

Central Valley RWQCB
The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB requires a National Pollution Discharge Elimination System (NPDES) Permit and Stormwater Pollution Prevention Plan (SWPPP) for Projects disturbing more than one acre of total land area. Because the Project is greater than one acre, an NPDES Permit and SWPPP will be required.

City of Tulare General Plan: The City of Tulare 2035 General Plan contains the following policies related to water resources:

- **LU-P11.3 System Expansion.** The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage systems, parks and other capital facilities made necessary to serve the new development.
- **LU-P11.4 Water Supply System.** The City shall require that water supply systems be adequate to serve the size and configuration of land developments. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.
- **LU-P11.5 Water Supply for New Development.** For all new development, prior to the approval of any subdivision applications, the developers shall assure that there is sufficient available water supply to meet Projected buildout.
- **LU-P11.6 Adequate System Maintenance.** The City shall require maintenance funding for streets, storm drainage, and ponding basins for new development.
- **LU-P11.7 Adequate Infrastructure Capacity.** The City shall only approve new development when it can be demonstrated by the applicant that adequate system capacity in the service area is or will be available to handle increases related to the Project.
- **LU-P11.9 Adequate City Service Capacity.** The City shall only approve new development when it can be demonstrated by the applicant that adequate public service capacity in the area is or will be available to handle increases related to the Project. School capacity will be discussed in the review of each development, and the City will ensure early coordination with the school districts serving the site. School capacity will be addressed as allowed under State law.
- **LU-P11.17 Fair Share Improvements.** The City shall ensure new development is required to participate on a fair-share basis in the completion of improvements to the existing sewer system, and/or the construction of new sewer trunk lines as described in the City's adopted Sewer Master Plan.

- **COS-P1.1 Regional Groundwater Protection.** The City shall work with Tulare County and special districts to help protect groundwater resources from overdraft by promoting water conservation and groundwater recharge efforts.
- **COS-P1.8 Water Conservation.** The City shall promote efficient water use and reduced water demand by:
    - Requiring water-conserving design and equipment in new construction.
    - Encouraging water-conserving landscaping and other conservation measures; and
    - Encourage retrofitting existing development with water conserving devices.
    - Providing public education programs.
    - Distributing outdoor lawn watering guidelines.
    - Promoting water audit and leak detection programs.
    - Enforcing water conservation programs.
- **COS-P1.11 Water for Irrigation.** Whenever possible, the City shall require new development to use recycled or non-potable water for irrigation in landscaped areas.

Discussion

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant with Mitigation: The Project will result in less than significant impacts to water quality due to potentially polluted runoff generated during construction and operation activities. Construction would include excavation, grading, and other earthwork across most of the 140.32-acre Project site. During storm events, exposed construction areas across the Project site may cause runoff to carry pollutants, such as chemicals, oils, sediment, and debris. Since the Project is greater than one acre in size, implementation of a Stormwater Pollution Prevention Plan (SWPPP) will be required for the Project. A SWPPP identifies all potential sources of pollution that could affect stormwater discharges from the Project site and identifies best management practices (BMPs) related to stormwater runoff. These BMPs and the implementation of Mitigation Measures HYD-1 and HYD-2 will ensure impacts from construction remain *less than significant with mitigation.*

During operation there may be chemicals or surfactants used for Project maintenance, so discharge in storm water runoff could impact water quality standards. The Project includes a 5.47-acre park including a 2.64-acre pond, which all stormwater runoff on the site will be diverted to during operation of the residential development. Therefore, potentially polluted surface runoff during normal operational activities is not expected to degrade surface or ground water quality off the Project site. To mitigate these potential operational and construction-related impacts, Mitigation Measures HYD-1 and HYD-2 will be implemented. Therefore, the impacts are *less than significant with mitigation.*

b) Would the Project substantially decrease groundwater supplies or interfere with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

Less than Significant Impact: A Water Supply Assessment was prepared by 4Creeks, Inc. and the full report can be found in Attachment F.

The Central Valley is currently dealing with a decline in groundwater supply. To assist in mitigating groundwater decline, The City of Tulare has established fees that will fund groundwater recharge and other water resource Projects within the City.

The City's current sole source of water supply is groundwater, which is extracted from underground aquifers through 23 active groundwater wells. The City's water supplies are entirely from the Kaweah Groundwater Subbasin, and this groundwater supply has reliably met the City's water demands. The City anticipates to supply all its water demand from the Kaweah Subbasin through the year 2040. The actual water supply in 2015 was 9,055.4 AF, which includes groundwater, surface water, and recycled water. The City of Tulare Public Water System supplied approximately 16,938 acre-feet (AF) of drinking water for human consumption in 2020. The UWMP also states that there is an available supply of 20,371.8 AFY by 2040. In 2015, the recorded yearly water usage was 15,350 AF of water.

Using information from the City's adopted 2020 Urban Water Management Plan (UWMP) and the Water Supply Assessment prepared by 4Creeks, the Project is expected to demand a total water use of 265.89 AFY. This is based on the total residential and park water uses estimated for the proposed Project. The estimated dwelling units for the Rural Residential portion (8 units) was included in the water use estimations, despite it not being planned for development as part of the proposed Project. The total residential water demand is estimated to be 286 AFY. This is based on an estimated population of 1,957 (564 Dwelling Units, 3.47 Persons/Dwelling Unit per the US Census Bureau). The Project also includes 5.47 acres of parks and open space. A conservative estimate would assume that the entire landscaping acreage will be irrigated lawn and will require five acre-feet of water per acre per year. This figure is based on information on water requirements for large, irrigated lawns such as golf courses in the region. This totals 27.35 AFY for the parks and open space. As stated previously, the total Project will require approximately 286 AFY.

In order to compare the water-use with and without implementation of the proposed Project, water demand factors from the Sacramento Valley Land Use/Water Supply Analysis Guidebook (2007) were used to make water use calculations. The Water Supply Analysis Guidebook suggests a water use of 3.5 acre-feet of water per acre, per year for row/field crops. Therefore, 127-acres of row crop agriculture would result in a water use of 444acre-feet of water per year.

The proposed residential development would require approximately 265.89 acre-feet of water per year. Therefore, the proposed Project would not increase water demand beyond existing conditions. The impact is *less than significant.*

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:

i. Result in substantial erosion or siltation on- or off-site?

Less than Significant with Mitigation: The proposed Project would result in the addition of impervious surfaces and alter existing drainage patterns on approximately 132.5 acres of the 140.32-acre Project site which would have the potential to result in erosion or siltation on- or off-site. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated through implementation of a Stormwater Pollution Prevention Plan (SWPPP) which include mandated erosion control measures, which are developed to prevent significant impacts related to erosion caused by runoff during construction (Mitigation Measure HYD-1). The Project proponent will also be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that existing drainage patterns are maintained during Project operations and that the Project would not result in substantial erosion or siltation on- or off-site. The impact is *less than significant with implementation of these mitigation measures.*

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less than Significant with Mitigation: The proposed Project would result in the addition of impervious surfaces on 132.5 acres of the total 140.32-acre Project site which would have the potential to increase surface runoff resulting in flooding on- or off-site. This impact would be appropriately mitigated through implementation of Mitigation Measure HYD-2, which requires the Project to submit drainage plans to the City Engineer prior to the issuance of grading permits. The drainage plans will include BMPs to ensure runoff from the Project will not result in flooding on- or off-site. Therefore, impacts are *less than significant with mitigation.*

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than Significant with Mitigation: The proposed Project would result in the addition of impervious surfaces and alter existing drainage patterns on approximately 132.5 acres of the 140.32-acre Project site which would have the potential to impact existing stormwater drainage systems or provide additional sources of polluted runoff. The proposed Project would contain a storm drainage basin to collect all runoff from the site. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated through implementation of a Stormwater Pollution Prevention Plan (SWPPP) which include mandated erosion control measures, which are developed to prevent significant impacts related to erosion caused by runoff during construction (Mitigation Measure HYD-1). During Project operations, the proposed impervious surfaces, including roads, building pads, and parking areas, would collect automobile derived pollutants such as oils, greases, rubber, and heavy metals. This could contribute to point source and non-point source pollution if these pollutants were transported into waterways during storm events. The Project proponent will be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that the Project would not overwhelm the planned stormwater drainage basin or result in discharges of polluted runoff into local waterways. The impact is *less than significant with implementation of these mitigation measures.*

iv. Impede or redirect flood flows?

Less than Significant with Mitigation: The Project site is generally flat and no significant grading or leveling will be required. The proposed Project site is not in proximity to a stream or river and will not alter the course of a stream or river. According to National Flood Hazard mapping by the Federal Emergency Management Agency, the proposed Project is not located within a 100-year flood hazard area.

The proposed Project would result in the addition of impervious surfaces on 132.5 acres of the 140.32-acre Project site which could affect drainage and flood patterns. This impact would be appropriately mitigated through implementation of Mitigation Measure HYD-2, which requires the Project to submit drainage plans to the City Engineer prior to the issuance of grading permits. The drainage plans will include BMPs to ensure the Project will

not impede or redirect flood flows. Therefore, impacts are *less than significant with mitigation.*

d) Would the Project, in flood hazard, tsunami, or seiche zones, risk the release of pollutants due to Project inundation?

No Impact: The proposed Project is located inland and not near an ocean or large body of water, therefore, would not be affected by a tsunami. The proposed Project is in a relatively flat area and would not be impacted by inundation related to mudflow. Since the Project is in an area that is not susceptible to inundation, the Project would not risk the release of pollutants due to Project inundation. As such, there is *no impact.*

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact: The Project would not conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan. The proposed Project is consistent with the Central Valley RWQCB. The Project will comply with all applicable rules and regulations regarding water quality and groundwater management and there is *no impact.*

Mitigation Measures for Hydrology and Water Quality

Mitigation Measure HYD-1: Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit.

- Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City.
- The City shall review noticing documentation prior to approval of the grading permit. City monitoring staff will inspect the site during construction for compliance.

Mitigation Measure HYD-2: The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to:

- Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust;
- A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures;
- Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand bagging, and soil stabilizers will be used;
- Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and
- BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.

Mitigation Measure HYD-3: A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:

- Runoff shall be directed away from trash and loading dock areas;
- Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;
- Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and
- Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.

X. LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☑
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑

Environmental Setting

The proposed Project site is in the northeastern portion of the City of Tulare Urban Development Boundary, just outside of the city limits, and approximately 2.87 miles northeast of the City of Tulare downtown. The Project site is within the Urban Development Boundary and Sphere of Influence of the City of Tulare and is planned to be annexed into the City. Under the City's 2035 General Plan, the site is designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre). The site is currently under Tulare County jurisdiction, and it is zoned as Exclusive Agriculture AE-20 (20-acre minimum) and Exclusive Agriculture AE-40 (40-acre minimum) by the County of Tulare. The Project would involve a zoning amendment to pre-zone the Project area in preparation for annexation into the City limits to Single-Family Residential (R-1-5, R-1-6) under the City of Tulare Code of Ordinances. The site will also require a General Plan Amendment to change the existing land use designation from Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) to Low-Density Residential (3.1-7 D.U./acre) and Rural Residential under the City of Tulare General Plan. The Project proposes two different residential lot sizes, ranging from 5,000 square feet to 6,600 square feet per lot.

The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

Regulatory Setting

City of Tulare General Plan: Approximately 130.52 acres of the Project site are designated as Residential Estate (2.1-3 D.U./acre), and approximately 9.8 acres are designated Rural Residential (0-2 D.U./acre) under the City of Tulare General Plan. The Project would re-designate the Residential Estate to Low Density Residential (3.1-7 D.U./acre). The Rural

Residential portion of the site would be subdivided, with one portion being changed to the designation of Low-Density Residential, and the remaining 7.8-acre portion will retain its Rural Residential land use designation and remain undeveloped. The following goals and policies in the City of Tulare General Plan are applicable to the Project site's residential land use designation:

Goal LU-3 To designate, protect, and provide land to ensure sufficient residential development capacity and variety to meet community needs and Projected population growth.

- **LU-P3.1 Neighborhood Housing Mix.** The City shall encourage mixed use neighborhoods to have a variety of housing types and densities to help create an overall healthy, balanced community.
- **LU-P3.2 Executive Housing.** The City shall encourage the development of "upper end" housing to better accommodate the local market for "executive housing."
- **LU-P3.3 Neighborhood Protection**. The City shall seek to prevent residential blight and promote healthy neighborhoods through public and private resources/programs (e.g. enforcement of all codes, neighborhood rehabilitation programs, and redevelopment actions).
- **LU-P3.4 Jobs-Housing Balance.** The City shall consider the effects of city land use proposals and decisions on the Tulare County area and the efforts to maintain a regional jobs housing balance.
- **LU-P3.5 Future Residential Development.** The City shall direct future residential development to areas adjacent or in close proximity to existing and future neighborhoods and neighborhood commercial areas to further Tulare as a self-sufficient, full-service city.
- **LU-P3.6 High Density Residential Locations.** The City shall encourage the development of higher density housing including near commercial services, employment centers, principal arterial routes, and public transportation.
- **LU-P3.7 Neighborhood Noise Abatement.** The City shall require the abatement of significant noise intrusion into existing and proposed new residential developments from the freeway, major arterials, the railroad, the airport, and other significant noise sources. The burden for mitigation shall be on the new user.
- **LU-P3.8 Incompatible Uses.** The City shall protect existing residential neighborhoods from the encroachment of incompatible activities and land uses (i.e. traffic, noise, odors, or fumes) and environmental hazards (i.e. flood, soil instability).
- **LU-P3.9 Planned Development.** The City shall encourage the use of planned development provisions in residential developments to provide flexibility, to meet

various socio-economic needs, and to address environmental and site design constraints.

- **LU-P3.10 Affordable Housing.** The City shall encourage the development of affordable housing to ensure that a variety of housing options are available to all income, age, and cultural groups.

City of Tulare Code of Ordinances

The Project proposes residential land uses in place of agricultural uses to accommodate housing needs in the City. The Small Lot Residential provides compact development of Single-Family housing. This designation typically has a density range of 6-8 DU/acre with a lot size between 3,200 and 4,000 square feet. The Single-Family Residential land use mainly provides low-density, Single-Family housing. This designation has a density range of 3.1-7.0 DU/acre with a minimum lot size of 5,000 square feet.

Chapter 10.32: Additionally, the entire Project site will be re-zoned to R-1-5 and R-1-6. The purpose of the Single-Family Residential (R-1) Districts are to provide living areas within the city where development is limited to low density concentrations of one-family dwellings. The R-1-5 designation requires a minimum lot size of 5,000 sq.ft, and the R-1-6 designation requires a minimum lot size of 6,000 sq. ft.

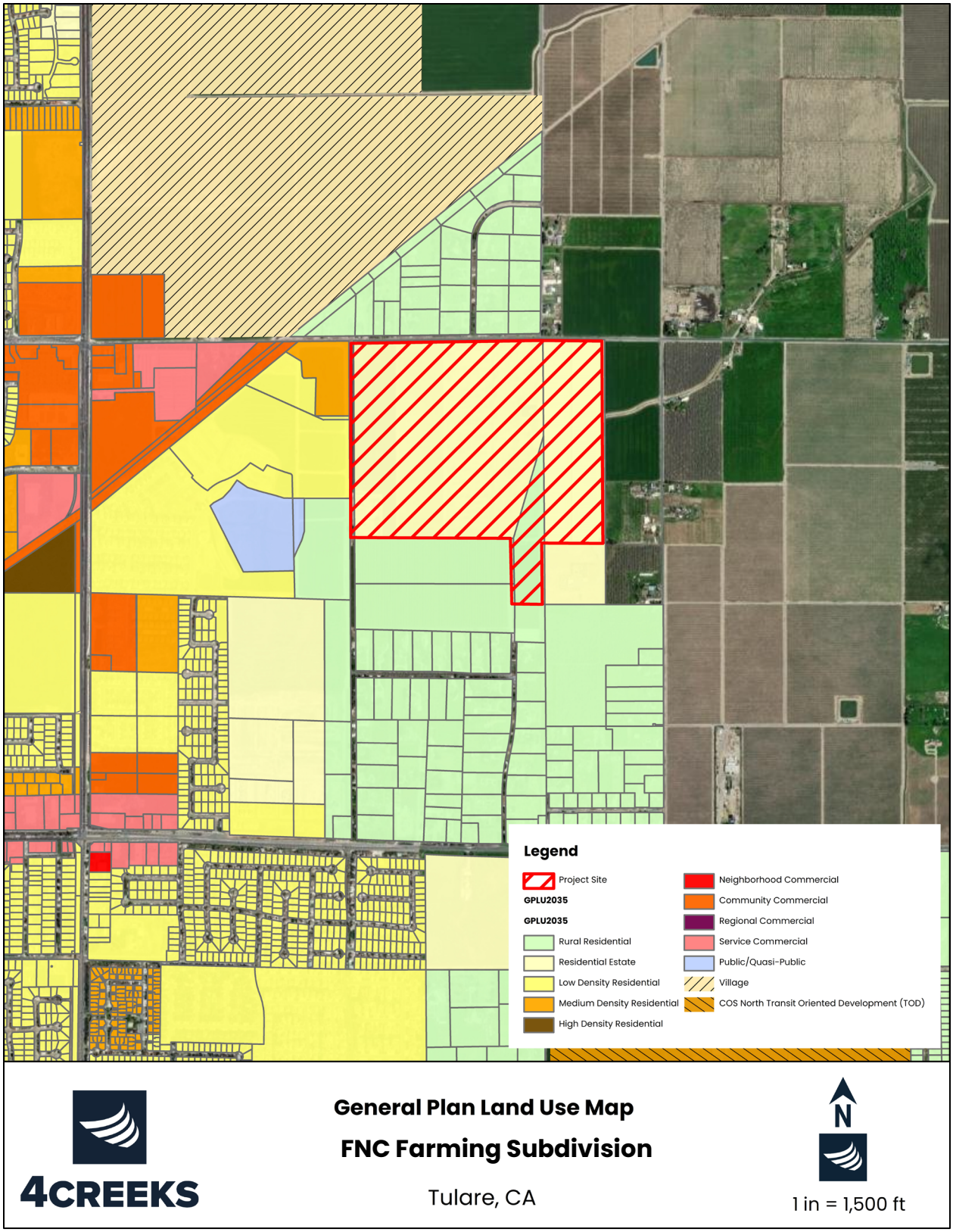

Figure 7: General Plan Land Use Map

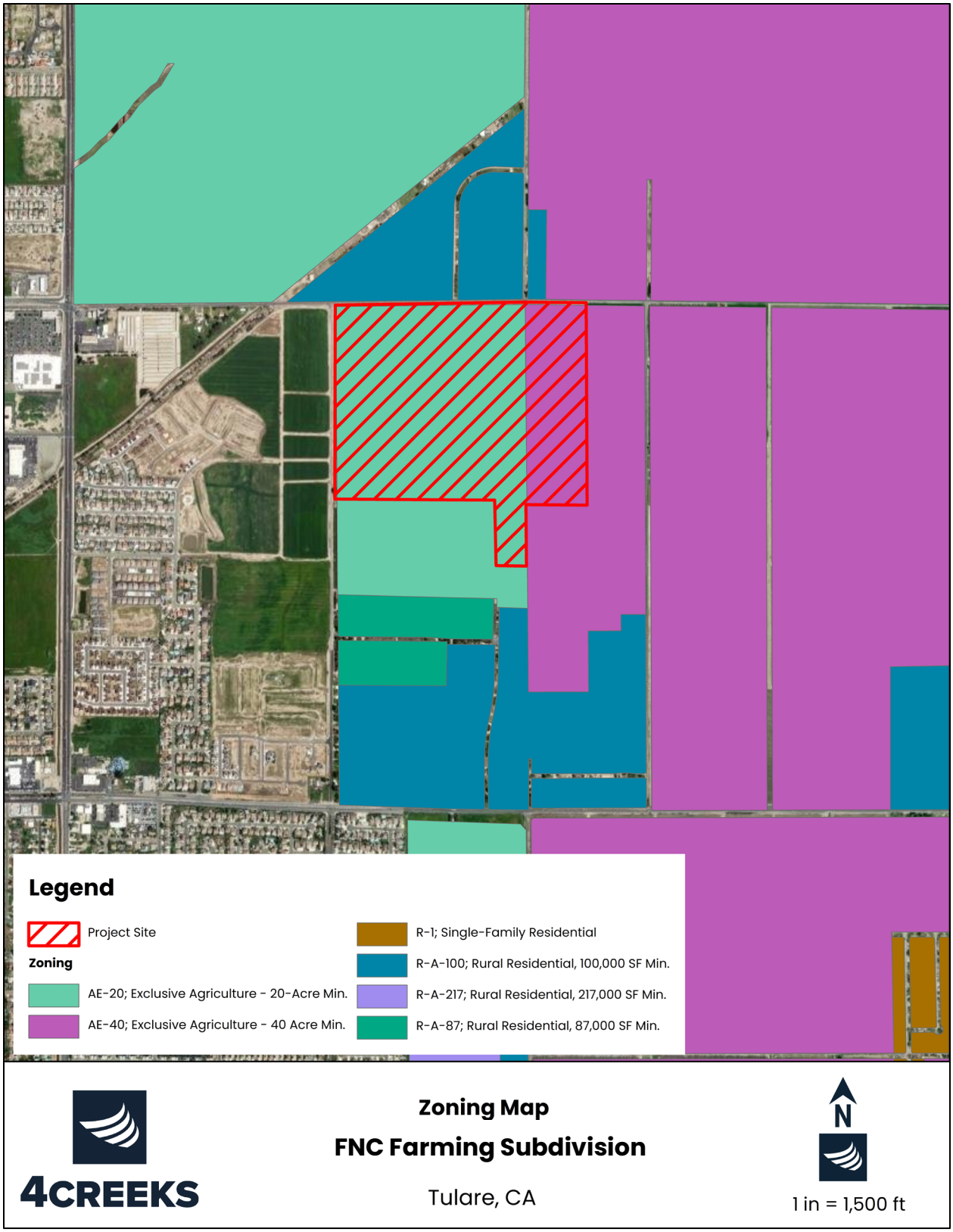

Figure 8: Zoning Map

Discussion

a) Would the Project physically divide an established community?

No Impact: The approximate 140.32-acre Project site was used for irrigated row crops until recently. Currently the Project Area is primarily bare ground after irrigated row crop removal, with limited disturbance tolerant annual grasses and herbaceous weeds in patches, and few landscaped shrubs. The remainder of the property to the west, east and south contains potted blueberries, and the ground is covered with a tarp to prevent other plants from occupying the area. The site contains no permanent structures and would not require the removal of any existing residences or businesses. The Project is bordered by rural residences to the north, and agriculture to the east, south and west of the site. However, single-family residences are planned to occur adjacent to Morrison Street on the western edge of the Project site. Upon completion, the proposed Project would result in a new land use that would increase connectivity by providing new sidewalks, new local roads, and a Class I bike path for residences along Castle Rock Avenue, Monarch Dunes Avenue, and Oakmore Street. The proposed Project would not physically divide the existing land uses or areas or any other established community. The Project site is currently under agricultural use, and not a publicly accessible/usable site that would promote connectivity of the surrounding land uses.

The proposed Project is surrounded by existing agricultural and rural residential development, but as discussed, the Project site is not currently promoting the connectivity of the surrounding land uses, as it is not open to public use. The proposed Project would result in the development of residential uses with a 5.47-acre park/pond in the central portion of the Project site. The proposed Project includes new internal roadways and pedestrian connectivity, a pedestrian/bike corridor throughout the residential area. The sidewalk would connect the residential uses throughout the Project site. These trails would be available for use by surrounding residents and would improve the overall connectivity to the surrounding community. Therefore, the impacts would be *less than significant*.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact: Regarding plan or policy consistency, the proposed Project is evaluated based on whether the proposed site plan, design features or development at this location would be consistent with the applicable goals, policies, and objectives outlined in the City's General Plan. The Project site is located on land designated for residential use by the City of Tulare 2035 General Plan. Although the proposed Project is zoned as Exclusive Agriculture (AE-20 & AE-40) by Tulare County, the City plans to annex the Project site into the City, and the site is within the City's Urban Development Boundary. The City has designated the site to be used for very low-density residential uses, particularly Residential Estate (2.1-3

D.U./acre) and Rural Residential (0-2 D.U./acre). The Project proposes changing the majority of the site to Low Density Residential and keeping a 7.8-acre portion Rural Residential. In order to be compliant with the City's General Plan and zoning ordinance, the Project will require a General Plan Amendment and pre-zoning of the site for the previously mentioned land use change.

The proposed Project does not conflict with this land use, or any other policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect and may actually reduce some environmental effects by proposing higher density development. According to the EPA report, *Protecting Water Resources with Higher-Density Development*, lower density development is often associated with greater environmental impacts resulting from greater travel distances, more impervious surfaces per household, and additional land consumption to accommodate housing demand in a community (EPA, 2006). Therefore, the proposed higher densities would address Land Use Policy P3.5 and P3.6 to encourage the development of higher density housing and to direct future residential development to areas adjacent to existing and future neighborhoods and neighborhood commercial areas near the Project site. The proposed Project would not conflict with land use plans, policies or regulations adopted for the purpose of avoiding or mitigating environmental effects. There is *a less than significant impact.*

XI. MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally - important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan?	☐	☐	☐	☑

Environmental Setting

Tulare County contains mineral resources of sand, gravel, and crushed stone, found in alluvial deposits and hard rock quarries. Historically, the County had mines containing mineral deposits of tungsten, copper, gold, magnesium, and lead, however most of these mines are now closed-leaving only 37 active mining operations. There are no active mining operations or designated Mineral Resource Zones within the City of Tulare. Most of this mining takes place along rivers and at the base of the Sierra foothills.

Regulatory Setting

California State Surface Mining and Reclamation Act
The California State Surface Mining and Reclamation Act was adopted in 1975 to regulate surface mining to prevent adverse environmental impacts and to preserve the state's mineral resources. The Act is enforced by the California Department of Conservation's Division of Mine Reclamation.

City of Tulare General Plan: The following mineral resource goals and policies in the Conservation and Open Space Element of the Tulare County General Plan are potentially applicable to the proposed Project:

Goal COS-8 To protect the current and future extraction of mineral resources that are important to the City's economy while minimizing impacts of this use on the public and the environment.

- **COS-P8.3 Future Resource Development.** Provide for the conservation of identified and/or potential mineral deposits within the UDB as areas for future resource development.

- **COS-P8.5 Incompatible Development.** Proposed incompatible land uses shall not be on lands containing, or adjacent to, identified mineral deposits or along key access roads, unless adequate mitigation measures are adopted or a statement of overriding considerations stating public benefits and overriding reasons for permitting the proposed use are adopted.
- **COS-P8.10 Resources Development.** The City will promote the responsible development of identified and/or potential mineral deposits.

Discussion

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact: The Project site has no known mineral resources that would be of a value to the region and the residents of the state, therefore the proposed Project would not result in the loss of impede the mining of regionally or locally important mineral resources. There is *no impact.*

b) Would the Project result in the loss of availability of a locally - important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan?

No Impact: There are no known mineral resources of importance to the region and the Project site is not designated under the City's or County's General Plan as an important mineral resource recovery site. For that reason, the proposed Project would not result in the loss of availability of known regionally or locally important mineral resources. There is *no impact.*

XII. NOISE

Would the Project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b) Generation of excessive ground-borne vibration or groundborne noise levels?	☐	☐	☑	☐
c) For a Project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☑	☐

Environmental Setting

Noise is often described as unwanted sound. Sound is the variation in air pressure that the human ear can detect. If the pressure variations occur at least 20 times per second, they can be detected by the human ear. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Ambient noise is the "background" noise of an environment. Ambient noise levels on the proposed Project site are primarily due to agricultural activities and traffic. Construction activities usually result in an increase in sound above ambient noise levels. Vibration is seismic waves that radiate along the surface of the earth and downward into the earth. The operation of heavy construction equipment, particularly pile driving and other impacts devices such as pavement breakers create this vibration.

Sensitive Receptors

Noise level allowances for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hotels/motels, hospitals, schools, and libraries are some of the most sensitive land uses to noise intrusion and therefore have more stringent noise level allowances than most commercial or agricultural uses that are not subject to impacts

such as sleep disturbance. The nearest sensitive receptor is the Wildhorse Subdivision that borders the Southeast border of the site.

Regulatory Setting

City of Tulare General Plan: The Noise Element of the City of Tulare General Plan is responsible for establishing noise standards within the City and includes the following goals and policies related to noise that may be applicable to the Project.

Goal NOI-1 Protect the citizens of Tulare County from the harmful effects of exposure to excessive noise.

- NOI-P1.5 Construction Noise. Reduce noise associated with construction activities by requiring properly maintained mufflers on construction vehicles, requiring the placement of stationary construction equipment as far as possible from developed areas, and requiring temporary acoustical barriers/shielding to minimize construction noise impacts at adjacent receptors. Special attention should be paid to noise-sensitive receptors (including residential, hospital, school, and religious land uses).
- NOI-P1.6 Limiting Construction Activities. The City shall limit construction activities to the hours of 6 am to 10 pm, Monday through Saturday.
- NOI-P1.18 Construction-related Vibration. Evaluate individual Projects that use vibration intensive construction activities, such as pile drivers, jack hammers, and vibratory rollers, near sensitive receptors for potential vibration impacts. If construction-related vibration is determined to be perceptible at vibration-sensitive uses, additional requirements, such as use of less vibration- intensive equipment or construction techniques, should be implemented during construction (e.g., drilled piles to eliminate use of vibration-intensive pile driver).

Discussion

a) Would the Project result in generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact: Project construction is anticipated to last approximately 10 years in five phases and will involve temporary noise sources in the vicinity of the Project. The average noise levels generated by construction equipment that will likely be used in the proposed Project are provided in Table 11.

There are sensitive receptors to the north, south and west of the Project site. The closest sensitive receptors are to the north of the Project site, approximately 40-50 feet away from

the northern site boundary. There is another close sensitive receptor southeast of the site, approximately 180 feet from the southeastern corner of the Project site, but no construction is planned to occur on the southeastern portion of the Project site. There are also single-family homes to the west and south, but they are separated by either vacant or agricultural land and are separated from the Project site boundary by at least 800 to 1000 feet.

The City of Tulare requires that mitigation measures be implemented if noise levels exceed 70 dB in sensitive outdoor areas or if interior noise levels exceed 55 dB. As shown in Figure 9, it was found that a residence must be at least 250 feet from construction in the exterior and 100 feet from construction in the interior to avoid noise levels exceeding these thresholds. The significant majority of the Project site is over 250 feet from sensitive receptors, and the sensitive receptors that are closer are separated by Prosperity Avenue. Prosperity Avenue separates the northern site boundary and the residential homes to the north. Prosperity Avenue is an arterial road and is a significant source of ambient noise and will serve as a buffer from the noise resulting from Project construction. Construction is not intended to exceed the existing ambient noise levels produced by the roadway.

With the Project bordering another residential community, noise disturbance is unavoidable. However, the construction would comply with Tulare Municipal Code Chapter 8.36 to ensure that the construction noise impacts would be less than significant. Measures such as maintaining minimum setback distances between construction equipment and receptors, only having construction during weekday daytime hours, and noise barriers would be implemented to avoid significant construction noise impacts.

Long-term noise levels resulting from the Project would be produced by single family residential homes, which are not normally associated with high operational noise levels. Because noise generated during Project construction would be intermittent, short term, and would not exceed the thresholds established by the Tulare Noise Ordinance for sensitive receptors and the Project does not propose uses that would typically generate high noise levels, the impact is *less than significant*.

Type of Equipment	Exterior Lmax at 50 feet (dBA)
Tractors	84
Loaders	80
Backhoes	80
Excavators	85
Generator Sets	82
Air Compressors	80
Rubber Tired Dozers	85

Forklifts	75
Welders	73
Graders	85
Scrapers	85
Cranes	85
Paving Equipment	85
Rollers	85

Table 11. Noise Levels of Noise-Generating Construction Equipment. Source: FHA Construction Noise Handbook (dBA at 50 feet). Noise levels beyond 50 feet were estimated using the inverse square law based on given values for dBA at 50 feet.

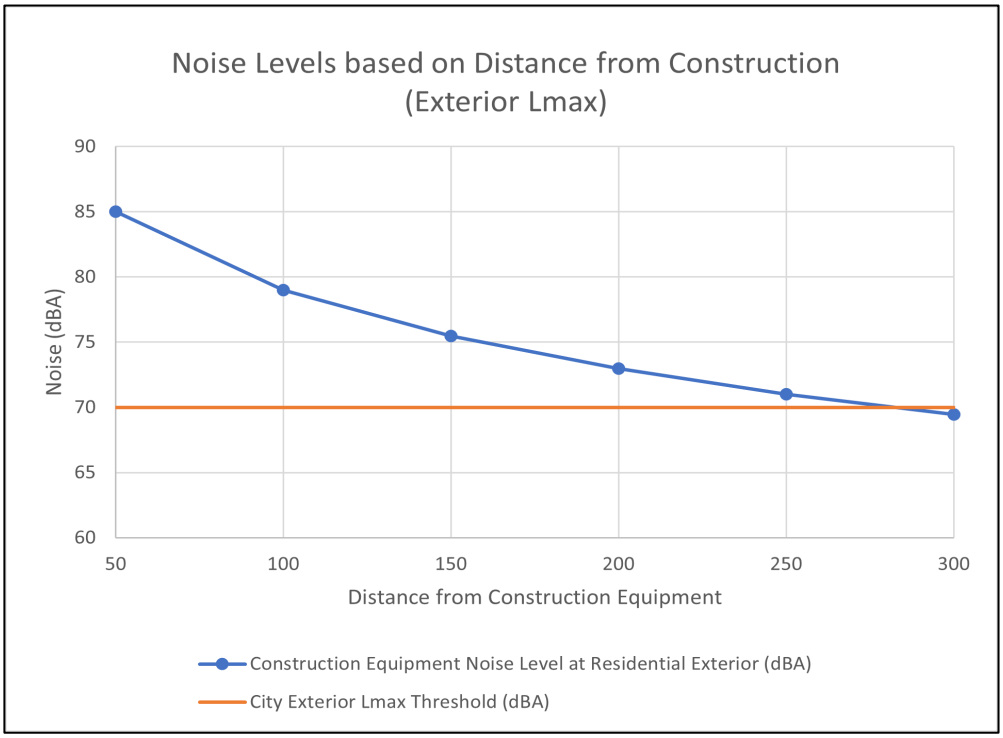

Figure 9: Construction Related Noise Levels - Exterior

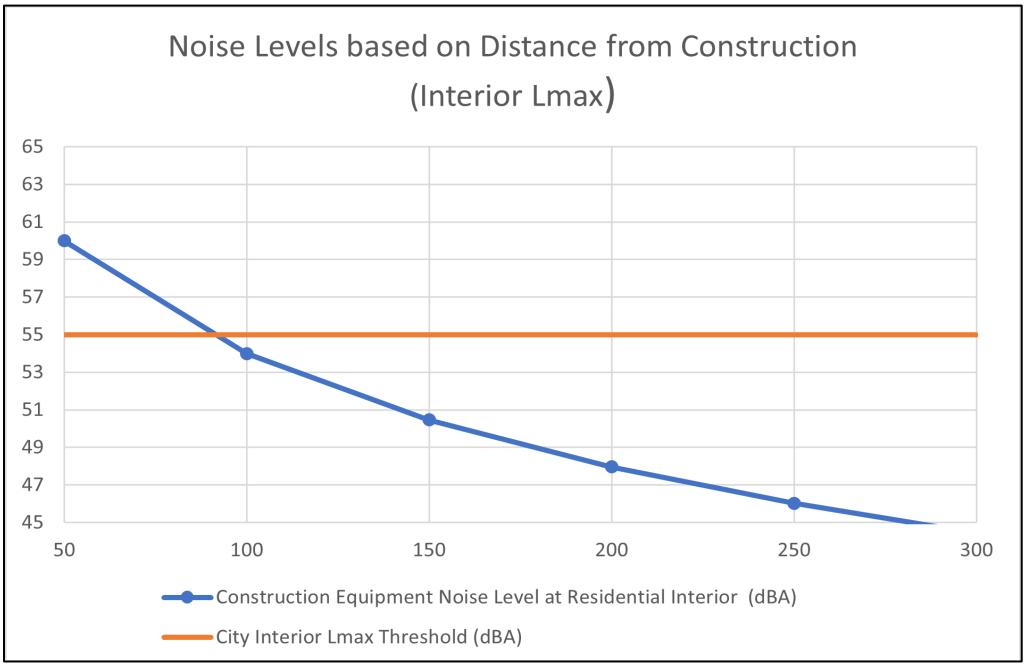

Figure 10: Construction Related Noise Levels - Interior

b) Would the Project result in generation of excessive ground-borne vibration or groundborne noise levels?

Less than Significant Impact: Although Project operations would not include uses or activities that typically generate excessive groundborne vibration or groundborne noise levels, Project construction could introduce temporary groundborne vibration to the Project site and the surrounding area. Sources that may produce perceptible vibrations are provided in Table 12.

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level (LV) at 25 feet
Pile driver (impact)	1.518 (upper range) 0.644 (typical)	112 104
Pile driver (sonic)	0.734 upper range 0.170 typical	105 93
Clam shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall)	0.008 in soil 0.017 in rock	66 75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Table 12. Vibration Levels Generated by Construction Equipment. Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.

The primary source of vibration during Project construction would likely be from a bulldozer (tractor), which would generate 0.089 inch per second PPV at 25 feet with an approximate vibration level of 87 VdB. Vibration from the bulldozer would be intermittent and not a source of continual vibration. There are no adopted City standards or thresholds of significance for vibration. The evaluation of potential impacts related to construction vibration levels is based on the published data in the 2018 FTA Guidelines. At 25 feet, the buildings most susceptible to vibration could be impacted at .12 inch/second. Because vibrations generated by Project construction would not exceed 0.12 inch/second.

Additionally, the significant majority of the Project is at least 800-1000 feet from the nearest sensitive receptor, and the closest sensitive receptors to Project construction are along the northern boundary of the Project site. The sensitive receptors (residential homes) to the north of the Project site are about 40-50 feet away from the northern Project boundary, but it is separated by Prosperity Avenue. Prosperity Avenue is a significant source of ambient noise, so Project construction would not significantly alter existing conditions and will be temporary (limited to construction). Construction features such as maintaining minimum setback distances between construction equipment and receptors, only having construction during weekday daytime hours, and noise barriers would reduce the impact of noise and vibration on sensitive receptors. The impact is *less than significant.*

c) For a Project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

Less than Significant Impact: The proposed Project is located approximately 6 miles North of the nearest public airport (Tulare Municipal Airport-Mefford Field). The Project site is not located within the 65 dB contours provided within the Medford Field Comprehensive Airport Land Use Plan. All land uses located outside of the 65 dB contours are considered less than significant. Implementation of the proposed Project would not result in a safety hazard for people residing or working in the Project area. There is a *less than significant impact.*

XIII. POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☑	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Environmental Setting

The United States Census Bureau stated the population in the City of Tulare to be 70,693 as of July 2022. This is an increase from the 2010 census, which counted the population in the City of Tulare to be 59,278. Factors that influence population growth in Tulare include job availability, housing availability, and the capacity of proposed and existing infrastructure.

Regulatory Setting

The City of Tulare population size is influenced by the development code and Housing Element of the General Plan. These documents regulate the number of dwelling units per acre allowed on various land uses and establish minimum and maximum lot sizes, which has a direct impact on the City's population size.

City of Tulare General Plan Housing Element

The 2035 General Plan includes the following goals and policies related to population and housing that correlate to the proposed Project:

Goal LU-3 To designate, protect, and provide land to ensure sufficient residential development capacity and variety to meet community needs and Projected population growth.

- **LU-P3.1 Neighborhood Housing Mix.** The City shall encourage mixed use neighborhoods to have a variety of housing types and densities to help create an overall healthy, balanced community.
- **LU-P3.5 Future Residential Development.** The City shall direct future residential development to areas adjacent or in close proximity to existing and future

neighborhoods and neighborhood commercial areas to further Tulare as a self-sufficient, full-service city.

- **LU-P3.6 High Density Residential Locations.** The City shall encourage the development of higher density housing including near commercial services, employment centers, principal arterial routes, and public transportation.

Discussion

a) Would the Project induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less than Significant: The United States Census Bureau stated the population in the City of Tulare to be 70,693 as of July 2022. The Project proposes to construct 556 units of low-density residential units and has allocated 8 rural residential units (no planned buildout), but 564 units will be assumed to account for potential future buildout of the rural residential area. According to the US Census Bureau for the year 2020 the average household size is 3.47 persons per household. Based on this metric, the Project will increase the City's population by 1,957 individuals.

The construction of housing at this location would not be unplanned, as the Tulare General Plan designated the proposed Project site for residential uses. Although the land use would be changing to a higher density residential land use than what is outlined in the General Plan, the city is planning for more businesses, services, and infrastructure to accommodate the new population growth. The Project would indirectly induce population growth through the eventual expansion of City limits, extension of roads and the extension of utilities to areas that were previously undeveloped. However, these improvements are depicted as future planned extensions in the City of Tulare's Water, Sewer and Storm Drainage Master Plans reflecting that these improvements are intended to occur. Additionally, these three utility Master Plans were adopted in 2009, reflecting that such improvements have been planned for approximately 15 years. Overall, the Project will not constitute an unplanned increase in growth and population. There is *a less than significant impact.*

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact: The Project would not displace any existing housing. There are no existing houses located on the Project site. Overall, the Project will increase the amount of available housing in the community. There is *no impact*.

XIV. PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:				
a. Fire protection?	☐	☐	☑	☐
b. Police protection?	☐	☐	☑	☐
c. Schools?	☐	☐	☑	☐
d. Parks?	☐	☐	☑	☐
e. Other public facilities?	☐	☐	☑	☐

Environmental Setting

Fire

The City of Tulare and Project site is served by The Tulare Fire Department (TFD), which operates 6 fire stations within the City of Tulare. The TFD will continue to provide fire protection services to the proposed Project site following Project implementation. TFD Fire Station #61 is the nearest fire station and is approximately 2.37 miles southwest of the Project.

Police

Law enforcement services are provided to the Project site via The Tulare Police Department (TPD). The TPD will continue to provide police protection services to the proposed Project site following Project implementation. The TPD headquarters are located approximately 2.66 miles southwest of the proposed Project site.

Schools

The majority of the proposed Project site is located within the Tulare City School District (TCSD) from Kindergarten through 8th Grade, and the eastern portion of the subdivision (east of Oakmore Road) is within the Sundale Union Elementary School District. The Tulare City School District includes 17 community day, elementary, and middle schools. The Tulare Joint Union High School District is separate, and there are 8 schools for grades 9-12th, which are distributed

throughout Tulare County. The nearest school is located approximately 1.2 miles west (Live Oak Middle School) of the Project site.

Sundale Union Elementary School District covers approximately 24 square miles and is composed of one single school which serves a rural population of TK-8th grade students. Sundale Union Elementary School is located approximately 5 miles from the City of Tulare.

Regulatory Setting

California Fire Code

The California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout the State of California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

City of Tulare Fire Department Plan Check and Hydrant Ordinance

Tulare's requirements for new construction include provisions for the Fire Department to review building and site plans prior to the issuance of any permit. The Fire Department ensures that proposed Projects will be adequately served by water, and accessible to emergency vehicles. The Department also enforces the City's Hydrant Ordinance, which states that subdividers are responsible for the installation of water mains and hydrants and determines the minimum spacing for fire hydrants. Street dimensions are scrutinized to ensure that space will be preserved for ladder trucks to be stabilized, and for emergency vehicles to turn around. Basic requirements in the City's subdivision ordinance include 52-foot minimum right-of-way widths and a 53-foot turning radius for cul-de-sacs.

City of Tulare General Plan

The 2035 General Plan includes the policies related to public services that correlate to the proposed Project:

- **COS-P4.1:** Parkland/Open Space Standards: The City's goal is to provide 4 acres of developed parkland per 1,000 residents. New residential or mixed-use developments containing a residential component may be required to provide parkland, or pay in-lieu fees, in this ratio as directed by the City.
- **LU-P11.3:** System Expansion: The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage

systems, parks, and other capital facilities made necessary to serve the new development.

- **LU-P11.9:** Adequate City Service Capacity: The City shall only approve new development when it can be demonstrated by the applicant that adequate public service capacity in the area is or will be available to handle increases related to the Project. School capacity will be discussed in the review of each development, and the City will ensure early coordination with the school districts serving the site. School capacity will be addressed as allowed under State law.
- **LU-P11.26:** Evaluate Fiscal Impacts: The City shall evaluate the fiscal impacts of new development and encourage a pattern of development that allows the City to provide and maintain a high level of urban services (including, but not limited to, water, sewer, transportation, fire stations, police stations, libraries, administrative, and parks), and community facilities and utility infrastructure, as well as attract targeted businesses and a stable labor force.

Discussion

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:

a. Fire protection?

Less Than Significant Impact: Fire protection requirements are based on the number of residents and workers in the TFD service areas. Service demand is primarily tied to population, not building size, because emergency medical calls typically make up the majority of responses provided by the fire department. As the number of residents and workers increases, so does the number of emergency medical calls. The proposed Project is a residential development' therefore, residents would occupy the Project site full-time and there would be an increase in demand for fire protection services.

Service demands during Project construction activities could increase. However, the presence of construction workers on site would be temporary and would cease after construction of the Project is complete. It would therefore not substantially increase the service demand for fire protection services in the City. In addition, the proposed Project would be designed and constructed in accordance with all applicable provisions of the 2019 California Fire Code, which includes requirements for adequate fire flows, width of

emergency access routes, turning radii for equipment, automatic sprinkler systems, fire alarms, and floor to sky height limits along emergency access routes. As part of the standard development practices, Project plans would be reviewed by the City and TFD, prior to construction. Compliance with fire code standards would reduce the potential demand for fire services by decreasing the likelihood and/or severity of a fire emergency at the site.

As previously discussed, the nearest fire station to the Project site is Fire Station 61 (at 800 S. Blackstone), located approximately 2.37 miles southwest. The TFD aims to arrive on the scene of an emergency within a total response time of under 6 minutes 90% of the time. In the event that Fire Station No. 61 could not meet the immediate needs of a call for services independently or does not have capability to address the full extent of a larger incident. The second closest Fire Station No. 63 located approximately 2.93 miles northwest of the Project site or other fire stations within the Tulare/Kings mutual aid agreement, as well as CAL FIRE, could respond or provide support (Tulare County Fire 2022).

The proposed Project would be subject to the payment of a Development Impact Fees (DIF), per Chapter 8.56 (Development Impact Mitigation Fees) of the City's Municipal Code. This fee would be used for future facility improvements necessary to ensure that the development contributes its fair share of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. A portion of the DIF would be used exclusively toward fire protection services.

If the Project is approved and annexed to the City the Project site would be located within the TFD's response area, and the department would provide service to the Project site. With the nearby services of Fire Station No. 61, as well as fire stations in neighboring jurisdictions, the Project would be served by sufficient fire protection services, and it is not anticipated that the Project would hinder the TFD from meeting its response time targets. Furthermore, payment of DIFs would ensure the Project contributes its fair share towards future facility improvements and equipment. The revenues and taxes generated from Project development would contribute to funding for facilities and services that have been identified by the TPD as needed for services in the future. Because the Project would increase the City's population by approximately 4,178 people

and the TFD has indicated they can adequately serve the site, the Project would not result in the need for new or expanded fire protection facilities, and impacts would be less than significant.

b. Police protection?

Less than Significant Impact: The Tulare Police Department (at 260 South M Street) is located approximately 2.84 miles southwest of the Project site. The Project site is currently located in the unincorporated County near the eastern edge of the City and is surrounded by undeveloped agricultural land and scattered rural residential development. It is therefore unlikely to attract attention that would make the Project susceptible to crime.

Construction activities may temporarily increase traffic volumes along Prosperity Avenue, Morrison Street, Oakmore Road and other nearby roadways during the construction period. The added traffic associated with workers commuting to the Project site, haul routes, deliveries, and other Project-related activities may increase the need for law enforcement services during construction activities. During construction, it is anticipated temporary security measures including security fencing and lighting would be installed to deter criminal activity. However, construction would be temporary and would not have a significant adverse effect on the TPD's ability to service the site.

A need for new or expanded public services, such as police facilities, is typically associated with a population increase. Although the proposed Project includes construction of new homes and would generate an increase of approximately 1,957 new residents to the area, it would not induce substantial population growth such that a new police station would need to be constructed on-site. It is anticipated Project design would employ defensible design, lighting, and landscaping, as well as open fencing. These techniques would minimize spaces that are hidden from public view, which would help prevent loitering and crime. Building entries, parking areas, and walkways would be sufficiently lit, which would facilitate safe pedestrian movement. These design and operational practices would lessen the demand for police protection services at the Project site by reducing the potential for crime to occur.

Police units are continuously mobile, and service calls are responded to by the nearest available mobile unit. As previously discussed, TPD's average response time for highest priority emergency calls is 5 minutes. Further, the police service ratio is one police officer per 1,500 population. Therefore, at full build out of the Project, it is estimated an additional 1.3 new officers would be required. However, it is not anticipated that the Project would hinder the TPD from continuing to meet or exceed target response times and provide adequate service levels. In addition, The proposed Project would be subject to the payment of a DIFs per Chapter 8.56 of the City's Municipal Code. This fee would be used for future facility improvements necessary to ensure that the development contributes its fair share

of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. A portion of the DIF would be used exclusively toward fire protection services.

Additionally, the proposed Project would be consistent with or would not hinder implementation of the City General Plan goals and policies pertaining to police protection services. The proposed Project is not anticipated to adversely affect service ratios or response times for police services such that new or expanded police facilities would be required. Therefore, the proposed Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered police facilities, or the need for new or physically altered police facilities; impacts would be *less than significant.*

c. Schools?

Less than Significant Impact: The proposed Project is within the Tulare City Elementary School District, the Tulare Joint Union High School District and the Sundale Union Elementary School District. Since the proposed Project includes the addition of 556 single-family residential units, the number of students in the school district would increase. The proposed Project site is located within the city limits and approved Urban Development Boundary (UDB) per the City's General Plan, and therefore, growth associated with the Project has been planned and expected. In addition to the goals and policies of the City's General Plan, is the Project would be required by Government Code Section 65995 to pay development impact fees to the school districts serving the Project site prior to the issuance of building permits. Pursuant to Government Code Section 65995, the payment of these fees is considered mitigation of Project-related school impacts. Other development projects are likewise subject to the payment of development fees to respective school districts. The funding program established by Government Code Section 65995 allows school districts to collect fees from new developments to offset costs associated with increasing school capacity needs and has been found by the state legislature to constitute "full and complete mitigation of the impacts of any legislative or adjudicative act … on the provision of adequate school facilities (Government Code Section 65995[h]). Mandatory payment of school fees would reduce impacts to these school districts to less than significant. Furthermore, any project associated with expanding school facilities, whether related to the construction of new facilities or modernization of existing facilities, would be subject to environmental review and mitigation pursuant to CEQA. Therefore, as this Project and other related projects within these school districts' service areas are subject to mandatory impact development fees that are considered by state law to fully mitigate potential impacts, the Project's specific and cumulative impacts to the Tulare City Elementary School District, the Tulare Joint Union High School District, and the Sundale Union Elementary School District would be *less than significant*.

d. Parks?

Less than Significant Impact: The proposed Project would provide new recreational opportunities or facilities to serve the community population, including a 5.47-acre Central Park and a continuous Class I bike/pedestrian trail, which would help to achieve the City of Tulare's standard of providing 3 acres of developed parkland per 1,000 residents (Quimby Act). Based on a household size of 3.47 persons per household (US Census Bureau 2024)), the Project will add 1,957 individuals to the City's population. Therefore, the Project's 5.47-acre park satisfies the 3 acres per 1000 residents ratio requirement.

Development of the proposed Project would not in and of itself necessitate the construction of new or expanded parks within the city. Parks would act as natural areas, provide stormwater detention, and include trails for recreation. The increase in population associated with the Project would not create a significant impact on city parks outside of the Project site such that there would be substantial deterioration or a need for new or expanded parks, as the new parks would be highly accessible for all Project residents. The proposed Project would also be subject to the payment of DIFs, as per Chapter 8.56 (Development Impact Mitigation Fees) of the City's Municipal Code. This fee would be used for future facility improvements necessary to ensure that the Project contributes its fair share of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. Additionally, the Project would comply with all the applicable goals and policies highlighted in the City's General Plan. As such, impacts associated with parks would be *less than significant.*

e. Other public facilities?

Less than Significant Impact: Water and wastewater services for the proposed development would be serviced by existing infrastructure beneath neighboring streets. An additional 556 residential units will increase the demand for water and wastewater facilities. According to Tulare's 2035 General Plan Land Use Element, the City states that new development must be responsible for expanding existing water and sewage systems. Therefore, the developer shall pay the required development impact fees to accommodate the expansion of existing systems. Additional discussion of water and wastewater services are provided in the Utilities section of this Initial Study. All development impact fees will be paid to accommodate the increase in the demand for public facilities. The impact is *less than significant.*

XV. RECREATION

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☑	☐
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☑

Environmental Setting

There are 20 parks that are owned and operated by The City of Tulare. Live Oak Park is the closest recreational area to the Project site and is located approximately 1.1 miles west of the Project site.

Regulatory Setting

Quimby Act

The 1975 Quimby Act (California Government Code section 66477) authorized cities and counties to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. The Act states that the dedication requirement of parkland can be a minimum of three acres per thousand residents or more and up to five acres per thousand residents if the existing ratio is greater than the minimum standard. Revenues generated through in-lieu fees collected and the Quimby Act cannot be used for the operation and maintenance of park facilities. In 1982, the Act was substantially amended. The amendments further defined acceptable uses of or restrictions on Quimby funds, provided acreage/population standards and formulas for determining the exaction, and indicated that the exactions must be closely tied (nexus) to a Project's impacts as identified through studies required by the California Environmental Quality Act (CEQA).

City of Tulare General Plan: The Conservation and Open Space Element of the City of Tulare General Plan contains the following recreational resource goals and policies potentially applicable to the Project.

Goal COS-4 To provide parks and recreation facilities and services that adequately meet the existing and future needs of all Tulare residents.

- COS-P4.1 Parkland/Open Space Standards. The City's goal is to provide 4 acres of developed parkland per 1,000 residents. New residential or mixed-use developments containing a residential component may be required to provide parkland, or pay in-lieu fees, in this ratio as directed by the City.
- COS-P4.5 Fair Share Responsibilities. The City shall ensure all future residential development is responsible for its fair share of the City's cumulative park and recreational service and facilities maintenance needs.
- COS-P4.6 Land Dedication. The City shall continue its practice of requiring the dedication of community and neighborhood park lands as a condition of approval for large residential development Projects (50 or more lots), if applicable.
- COS-P4.7 Fees In Lieu of Parkland Dedication. The City shall allow the payment of fees in lieu of parkland dedication, especially in areas where dedication is not feasible, as provided under the Quimby Act.

Discussion

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less than Significant Impact: Implementation of the proposed residential Project would include the construction of a 5.47-acre community park, which would satisfy the park-to-resident ratio outlined in the City of Tulare Municipal Code Section 8.26.040. The City requires a ratio of 3 acres of parkland per 1,000 residents. This standard for park dedication was established in compliance with the Quimby Act, California Subdivision Map Act, the Parks Master Plan, and the Open Space and Conservation Element of the City of Tulare General Plan. The Project also includes a Class I Bike/Pedestrian path throughout the site that would connect the residential uses to the community park. Additionally, all developed areas would be landscaped and would provide green space throughout the Project site.

Adherence to the City's municipal code (Chapter 8.56 Development Impact Mitigation Fees) provides funding for the maintenance and operation of existing parks and the development of new parks in the City through in-lieu fees. In summary, the proposed Project would not increase the use of existing recreational facilities such that substantial physical deterioration would occur, as residents and visitors of the Project site would be more likely to use on-site amenities. Conformance with existing regulations and General Plan policies along with the presence of multiple recreational opportunities (park, multi-use trail) will ensure that the potential for significant deterioration of existing recreational

facilities is low. Therefore, impacts related to recreational facilities would be *less than significant.*

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

Less than Significant Impact: The Project would include construction of a 5.47-acre park / pond. The proposed park is located in the central portion of the proposed neighborhood and would not increase environmental impacts beyond those associated with the proposed Project. The impact is *less than significant.*

XVI. TRANSPORTATION

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☑	☐	☐	☐
b) Conflict or be inconsistent with the CEQA guidelines Section 15064.3, Subdivision (b)?	☐	☐	☑	☐
d) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☐	☑

Environmental Setting

Vehicular Access

Vehicular access to the Project is available via Prosperity Avenue on the northern side of the site, Morrison Street on the west side of the site, and the Project will extend Oakmore Street along the Oakmore Street alignment beginning on the northern portion of the Project site. The Project includes a network of local streets that will provide full access to the Project site.

Parking

Each Single-Family home will contain at least a two-car garage, as well as room for two more cars in the driveway. During construction, workers will utilize existing parking areas and/or temporary construction staging areas for parking vehicles and equipment.

Pedestrian and Cyclist Connectivity: The Project will install sidewalks along the south side of Prosperity Avenue, the east side of Morrison Street, and on all internal streets within the Project area, including Oakmore Street. A Class I bike path is proposed along Oakmore Street, Monarch Dunes Avenue, and Castlerock Avenue. These features will provide connectivity for pedestrians and cyclists within the Project area and offsite.

Roadway Descriptions

Morrison Street is a north-south collector that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Oakmore Road is a north-south arterial that extends north from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Prosperity Avenue is an east-west arterial that extends throughout the center of the city of Tulare. In the vicinity of the Project, it exists as a four-lane roadway and provides access to agricultural, commercial, industrial, and residential land uses. Across the Project's frontage however, Prosperity Avenue exists as a two-lane road.

Regulatory Setting

CEQA Guidelines Section 15064.3, Subdivision (b): Criteria for Analyzing Transportation Impacts

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, Projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the Project area compared to existing conditions should be considered to have a less than significant transportation impact.

(2) Transportation Projects. Transportation Projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity Projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular Project being considered, a lead agency may analyze the Project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many Projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a Project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a Project's vehicle miles traveled

and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the Project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

City of Tulare Improvement Standards: The City of Tulare's Improvement Standards are developed and enforced by the City of Tulare's Engineering Division to guide the development and maintenance of City Roads. The cross-section drawings contained in the City Improvement Standards dictate the development of roads within the City.

City of Tulare General Plan:
The 2035 General Plan includes the policies related to transportation that correlate to the proposed Project:

- **TR-P2.3 Level of Service Standard.** The City shall maintain Level of Service "D," as defined in the Highway Capacity Manual (published by the Transportation Research Board of the National Research Council), as the minimum desirable service level at which freeways, arterial streets, collector streets, and their intersections should operate.
- **TR-P2.6 Highway Right-of-Way.** The City shall work with Caltrans to ensure that new development Projects include the dedication of land to match the ultimate right-of-way as delineated in the Caltrans Transportation Concept Reports.
- **TR-P2.10 Roadway Improvements.** The City shall improve existing roadway links and intersections which are identified as operating below Level of Service "D" standard or have other significant existing safety or operational deficiencies.
- **TR-P2.14 Driveway/Curb Cut Consolidation.** The City shall encourage the consolidation of driveways, access points, and curb cuts along existing developed major arterials or arterials when new development or a change in the intensity of existing development or land uses occurs or when traffic operation or safety warrants.
- **TR-P2.27 Orientation of Subdivision Away from Arterials.** The City shall require residential development to be oriented away (side-on or rear-on) from major arterials and arterials, and properly buffered from these roadway types to preserve the carrying capacity on the street and protect the residential environment. No single-family residence driveways are allowed on collector streets.
- **TR-P6.2 Provision of Sidewalks for new Development.** The City shall require all new development to provide sidewalks or other suitable pedestrian facilities. Whenever feasible, pedestrian paths should be developed to allow for unobstructed pedestrian flow to major destinations such as bus stops, schools, parks, and shopping centers.

Discussion

a) Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Potentially Significant Impact: The existing General Plan established LOS "D" as the minimum acceptable LOS standard on city facilities. A traffic study prepared for the Project by Ruettgers & Schuler, Inc. (Attachment E) concluded that the Project would result in a significant increase in vehicle or trips.

Table 13 shows the estimated vehicle trips generated for the proposed Project. The proposed Project is expected to generate approximately 8,608 daily trips, including 177 AM peak hour trips (109 inbound, 68 outbound) and 502 PM peak hour trips (241 inbound, 261 outbound). All roadway segments within the scope of the study currently operate at or above LOS D and are expected to continue to do so through the year 2044, both with and without the Project.

General Information			Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
ITE Code	Development Type	Variable	ADT	In% Split/Trips	Out% Split/Trips	In% Split/Trips	Out% Split/Trips
210	Single-Family Detached Housing	556 Dwelling Units	4,631	25% 84	75% 252	63% 297	37% 174
821	Shopping Plaza*	50,000 S.F.	5,261	62% 109	38% 68	48% 241	52% 261
Sub-total			9,892	109	68	241	261
Adjustments Pass-by		15%	789	16	10	36	39
Total			8,608	88	55	193	209

Table 13. Project Trip Generation (Source: Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition)

#	Intersection	Total Improvements Required by 2044	Project Percent Share
1	Mooney Blvd & Cartmill Ave	Add NBT, SBT	4.74%
6	Mooney Blvd & Cartmill Ave	Add NBT, NBL, SBT, SBL, EBT, WBT, WBL	21.47%
7	Morrison St & Seminole Ave	Signal	53.12%
9	Mooney Blvd & Seminole Ave	Signal	2.73%
12	Morrison St & Tulare Ave	Add EBR	19.11%

Table 14. Future Intersection Improvements

*Removed from Project site plan in later design phases.

Traffic Improvement Acronyms:

NBT – North Bound Through	NBL – North Bound Left	SBT – South Bound Through
SBL – South Bound Left	EBT – East Bound Through	EBR – East Bound Right
WBT – West Bound Through	WBL – West Bound Left	

However, with the addition of Project traffic, the intersection of Morrison Street and Prosperity Avenue is anticipated to operate below an acceptable level of service. Other roadways near but not immediately adjacent to the Project site are also expected to operate below an acceptable level of service with the addition of Project traffic. These intersections include Mooney Boulevard & Cartmill Avenue, Hillman & Prosperity Avenue, Mooney Boulevard & Seminole Avenue, and Mooney Boulevard & Tulare Avenue. All remaining intersections operate at an acceptable level of service in 2024 through 2044 prior to, and with the addition of Project traffic.

Ruettgers & Schuler identified various roadway improvements that would improve the level of service, which would include the installation of traffic signals and the addition/alteration of right-turn lanes and through lanes for north, south, east and west bound traffic. These improvements are needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the Project site. Recommended future intersection and roadway improvements are shown on Table 14, above.

Potential impacts of the Project on traffic delays within the Project vicinity, recommended roadway improvements, and the feasibility of those improvements will be discussed in greater detail in the Focused EIR prepared for the proposed Project. The Project may result in conflicts with the City of Tulare's policies on level-of-service, the impact is *potentially significant.*

b) Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

Less than Significant Impact: An analysis of Project VMT (vehicle miles traveled) was conducted in accordance with *Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743*, a City of Tulare memorandum, dated June 26, 2020 (VMT Guidelines).

Project Screening

The VMT Guidelines contain "screening thresholds" for identifying whether a land use Project should be expected to result in a less than significant transportation impact under the California Environmental Quality Act (CEQA). Projects meeting one or more of these

screening criteria are presumed to generate insignificant levels of VMT and would not be required to undergo a detailed VMT analysis.

One screening threshold applies to residential Projects located in low VMT areas. The VMT Guidelines include a map generated by the TCAG regional travel model that identifies which areas satisfy the City's VMT "reduction target" (at least 15 percent below the regional average). Since the Project is shown to be in a low VMT area (see Attachment E for map), the residential portion of the Project is presumed to create a less than significant transportation impact.

The Project meets VMT screening criteria, and therefore, is presumed to have a *less than significant* impact under CEQA.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact: The proposed Project does not include any features that could result in increased hazards due to a geometric design feature. All proposed road designs will be reviewed and approved by the City of Tulare Engineering department. There is *no impact.*

d) Would the Project result in inadequate emergency access?

Less Than Significant Impact: This Project would not result in inadequate emergency access. Emergency access to the site would be via Morrison Street, Prosperity Avenue and Seminole Avenue. A network of local roads within the proposed Project property will provide full access onto and off of the Project site. Any impacts related to emergency access would be *less than significant.*

XVII. TRIBAL CULTURAL RESOURCES

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

A Phase 1 cultural resources assessment for the FNC Farming Housing Subdivision was conducted by SOAR Environmental (Attachment C). The Project proposes to construct 556 single-family housing units, a community park, and a rural residential zone (undeveloped) on a total of 140.32-acres: Accessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010.

Environmental Setting

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans

during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothill tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous lifeways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere. The Project Area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and located between the Kings River and the north shore of Tulare Lake. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Project Area is likely within the Telamni Yokuts territory. The main village for this area was Waitatshuulul, which was approximately 7 miles north of the Project site along Packwood Creek.

The San Joaquin Valley did not experience contact with Europeans until the late 1700s. The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 a group known as the Catalonian Volunteers entered the valley through Tejon Pass in search of deserters from the Southern California Missions. However, the group only made it as far north as Buena Vista Lake in modern day Kern County before turning around due to the extensive swamps. Initial settlement within the valley by Europeans in the 1830s was largely either by trappers or horse thieves. With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state, and Tulare County was established in 1853. Visalia, founded in 1852, is one of the oldest cities in the Southern San Joaquin Valley. During the first few decades, Visalia was a supply center for nearby gold rushes, and had an agricultural economy based on livestock and some agriculture.

Cultural Resources Record Search

The Project Area is located in the USGS Tulare 7.5’ Series Quadrangle (USGS 2021). On December 5, 2023, SOAR Environmental submitted a records search request to the Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield (Attachment C). The records search included a 0.5-mile buffer around the Project Area. The results from the records search indicate two (2) cultural resource studies have been conducted within the Project Area, with one (1) negative result cultural resource study outside the edge of the far south-west corner of the Project Area. According to the information on file, there are no known resources within the Project Area. There are two (2) recorded resources within the 0.5-mile record search radius. There were four (4) reports identified within a 0.5-mile radius of the Project Area. There are no recorded cultural resources within the Project Area or radius that are listed in the National Register of Historic Places, the California Register of

Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks. Both are historic-era structures, a railroad branch line and a district canal. In addition to the SSJVIC research, SOAR Environmental further reviewed the cultural resources 0.5-miles from the Project boundary. Using Google Earth aerial maps, the historic railroad branch was determined the majority of the track, ties, and ballast from the Atchison, Topeka, and Santa Fe Railway were removed from the branch lines on the east side of the San Joaquin Valley in the early 1990s.

Native American Consultation

The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)).

In accordance with the Tribal Consultation Guidelines and SB 18, government to government consultation between local governments and Native American tribes prior to the adoption or amendment of a general plan is required. Additionally, California PRC § 5024 requires consultation with the Office of Historic Preservation (OHP) when a project may impact historical resources located on State-owned land. California State law (SB 18) requires cities and counties to notify and consult with California Native American Tribes about proposed local land use planning decisions for the purpose of protecting Traditional Tribal Cultural Places ("cultural places").

Pursuant to AB 52 guidelines, Native American Tribes that could potentially be impacted by the Project were contacted. The tribes that were formally noticed of this Project were the Santa Rosa Rancheria Tachi Yokut Tribe of the Southern Valley Yokut, Tule River Indian Tribe of the Yokut, and the Wuksachi Indian Tribe and Eshom Valley Band of the Foothill Yokut and Mono. These Rancherias are not located within the City limits.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information

System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

Soar Environmental did not receive comments from the Tulare County Native American groups or affiliated individuals regarding the proposed development at the project location.

Regulatory Setting

In this report "cultural resources" are defined as prehistoric or historical archaeological sites as well as historical objects, buildings, or structures. In accordance with 30 Code of Federal Regulations (CFR) §60.4, "historical" in this report applies to cultural resources which are at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state level in the California Register of Historical Resources (CRHR), or at the federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called "historical resources" (California Code of Regulations [CCR] 15064.5[a]). Under this statue the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for inclusion in the NRHP are deemed "historic properties."

Historical Resources

Historical resources are defined by CEQA as resources that are listed in or eligible for the California Register of Historical Resources, resources that are listed in a local historical resource register, or resources that are otherwise determined to be historical under California Public Resources Code Section 21084.1 or California Code of Regulations Section 15064.5. Under these definitions Historical Resources can include archaeological resources, Tribal cultural resources, and Paleontological Resources.

Archaeological Resources

As stated above, archaeological resources may be considered historical resources. If they do not meet the qualifications under the California Public Resources Code 21084.1 or California Code of Regulations Section 15064.5, they are instead determined to be "unique" as defined by the CEQA Statute Section 21083.2. A unique archaeological resource is an artifact, object, or site that: (1) contains information (for which there is a demonstrable public interest) needed to answer important scientific research questions; (2) has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resource (TCR)

Tribal Cultural Resources can include site features, places, cultural landscapes, sacred places, or objects, which are of cultural value to a Tribe. It is either listed on or eligible for the CA Historic Register or a local historic register or determined by the lead agency to be treated as TCR.

Paleontological Resources

For the purposes of this section, "paleontological resources" refers to the fossilized plant and animal remains of prehistoric species. Paleontological Resources are a limited scientific and educational resource and are valued for the information they yield about the history of the earth and its ecology. Fossilized remains, such as bones, teeth, shells, and leaves, are found in geologic deposits (i.e., rock formations). Paleontological resources generally include the geologic formations and localities in which the fossils are collected.

Native American Reserve (NAR)

This designation recognizes tribal trust and reservation lands managed by a Native American Tribe under the United States Department of the Interior's Bureau of Indian Affairs over which the County has no land use jurisdiction. The County encourages adoption of tribal management plans for these areas that consider compatibility and impacts upon adjacent area facilities and plans.

National Historic Preservation Act

The National Historic Preservation Act was adopted in 1966 to preserve historic and archeological sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

California Historic Register

The California Historic Register was developed as a program to identify, evaluate, register, and protect Historical Resources in California. Historical resources may include, but are not limited to, "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant" (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted in accordance with the state guidelines are also considered historic resources under California Public Resources Code (PRC) Section 5020.1.

According to CEQA guidelines §15064.5 (a)(3), criteria for listing on the California Register of Historical Resources includes the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.

- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places (NRHP), and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

According to CEQA guidelines §21074 (a)(1), criteria for tribal cultural resources includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    - Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    - Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

Protection of cultural resources within California is additionally regulated by PRC §5097.5, which prohibits destruction, defacing, or removal of any historic or prehistoric cultural features on land under the jurisdiction of State or local authorities.

City of Tulare General Plan: The City of Tulare General Plan includes the following goals and policies pertaining to tribal cultural resources:

Goal COS-5 To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.

- **COS-P5.1 Archaeological Resources.** The City shall support efforts to protect and/or recover archaeological resources.
- **COS-P5.6 Protection of Resources with Potential State or Federal Designations.** The City shall encourage the protection of cultural and archaeological sites with potential

for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.

- **COS-P5.9 Discovery of Archaeological Resources.** In the event that archaeological/ paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist/ paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.
- **COS-P5.10 Discovery of Human Remains.** Consistent with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during Project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). If any human remains are discovered or recognized in any location on the Project site, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
    - The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and
    - If the remains are of Native American origin,
        - The descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains, and any associated grave goods as provided in Public Resources Code Section 5097.98.
        - The Native American Heritage Commission was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or
        - The landowner or his or her authorized representative rejects any timely recommendations of the descendent, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.

- **COS-P5.11 Impact Mitigation.** If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.
- **COS-P5.12 Mitigation Monitoring for Historical Resources.** The City shall develop standards for monitoring mitigation measures established for the protection of historical resources prior to development.
- **COS-P5.13 Alteration of Sites with Identified Cultural Resources.** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.
- **COS-P5.14 Education Program Support.** The City shall support local, state, and national education programs on cultural and archaeological resources.
- **COS-P5.15 Solicit Input from Local Native Americans.** The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- **COS-P5.16 Confidentiality of Archaeological Sites.** The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/paleontologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.
- **COS-P5.17 Cooperation of Property Owners.** The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.
- **COS-P5.18 Archaeological Resource Surveys.** Prior to Project approval, the City shall require Project applicant to have a qualified archaeologist conduct the following activities: (1) conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories, (2) conduct field surveys where appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

Tulare County General Plan (2012)

Chapter 8.6 of the Tulare County General Plan of 2012 promotes the preservation of cultural and historic resources through managing and protecting sites of cultural and archeological importance for the benefit of present and future generations (County of Tulare 2012). The following policies are outlined for the preservation of cultural resources.

- **ERM-6.1 Evaluation of Cultural and Archaeological Resources:** The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.
- **ERM-6.2 Protection of Resources with Potential State or Federal Designations:** The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.
- **ERM-6.3 Alteration of Sites with Identified Cultural Resources:** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.
- **ERM-6.4 Mitigation:** If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.
- **ERM-6.5 Cultural Resources Education Programs:** The County should support local, State, and national education programs on cultural and archaeological resources.
- **ERM-6.7 Cooperation of Property Owners:** The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.
- **ERM-6.8 Solicit Input from Local Native Americans:** The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- **ERM-6.9 Confidentiality of Archaeological Sites:** The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

- **ERM-6.10 Grading Cultural Resources Sites:** The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq.

Discussion

a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

Less Than Significant Impact with Mitigation: The Project would not cause a substantial adverse change in the significance of a tribal cultural resource. The Project site is not listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources. Based on the results of the records search, no previously recorded tribal cultural resources are known to be located within the Project site. Although no historical resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that impacts to tribal cultural resources will be *less than significant with mitigation incorporation*.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact with Mitigation: The lead agency has not determined there to be any known tribal cultural resources located within the Project area. Additionally, there are not believed to be any paleontological resources or human remains buried within the Project area's vicinity. However, the potential for buried cultural deposits in the Project area is moderate. If resources were found to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American Tribe. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that any impacts resulting from Project implementation remain *less than significant with mitigation incorporation.*

Mitigation Measures for Impacts to Tribal Cultural Resources:

Mitigation Measure CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

XVIII. UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?	☐	☐	☑	☐
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☑	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	☐	☐	☑	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☑
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☑

Environmental Setting

According to the Tulare Municipal Service Review (2013), the City would be able to provide the necessary infrastructure services and utility systems required for new development. Utilities and service systems include wastewater treatment, storm water drainage facilities, water supply, landfill capacity, and solid waste disposal.

Wastewater: Wastewater will be collected and treated at the City's wastewater treatment facility, which is located at the intersection Paige Ave. and West St. Extension of the City's sewer system is planned for future development within the Project area, according to the Sewer System Master Plan for the City of Tulare.

Solid Waste: Solid waste collection service is provided by the City of Tulare Solid Waste Division. Solid waste disposal will be provided by the Tulare County Solid Waste Department, which

operates two landfills and six transfer stations within the county. Combined, these landfills receive approximately 300,000 tons of solid waste per day.

Water: Water for the proposed development will be provided by the City of Tulare. The City's primary water source is groundwater. Implementation of the proposed Project will not require additional water entitlements. Water pipeline extension has been planned to occur on the Project site, according to the Water System Master Plan (2009) for the City of Tulare.

Storm Drainage: Tulare is currently in an agreement with Tulare Irrigation District (TID). The City pumps storm water into canals owned by TID. Storm water is also disposed of and detained in storm drainage detention and retention basins throughout the City. Tulare actively improves its storm drainage system to accommodate new urban development. According to the Storm Drainage System Master Plan (2009), storm drain infrastructure will be extended onto the Project site to accommodate new development. Additionally, a 5.47-acre park and pond will be established and will accommodate storm water flows produced from the development.

Regulatory Setting

CalRecycle

California Code of Regulations, Title 14, Natural Resources – Division 7 contains all current CalRecycle regulations regarding nonhazardous waste management in the state. These regulations include standards for the handling of solid waste, standards for the handling of compostable materials, design standards for disposal facilities, and disposal standards for specific types of waste.

Central Valley RWQCB

The Central Valley RWQCB requires a Stormwater Pollution Prevention Plan (SWPPP) for Projects disturbing more than one acre of total land area. Because the Project is greater than one acre, a SWPPP to manage stormwater generated during Project construction will be required.

The Central Valley RWQCB regulates Wastewater Discharges to Land by establishing thresholds for discharged pollutants and implementing monitoring programs to evaluate program compliance. This program regulates approximately 1500 dischargers in the region.

The Central Valley RWQCB is also responsible for implementing the federal program, the National Pollutant Discharge Elimination System (NPDES). The NPDES Program is the federal permitting program that regulates discharges of pollutants to surface waters of the U.S. Under this program, a NPDES permit is required to discharge pollutants into Waters of the U.S. There are 350 permitted facilities within the Central Valley Region.

Discussion

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?

Less than Significant Impact: The proposed Project will require the extension of existing utility services into the Project area. This is not anticipated to cause a significant environmental effect because extension would occur within the right-of-way prior to street construction and/or will occur in areas previously planned for urban development.

The City's wastewater treatment facility (WWTF) has two wastewater treatment trains, domestic and industrial WWTT. Both operate in accordance with the Central Valley Regional Water Quality Control Board Waste Discharge Requirements (WDR) Order NO. R5-2002-0186. The City's Municipal Service Review (2013) indicates that Tulare's WWTF is at sufficient capacity to accommodate new development, including the proposed residential subdivision, which would tie into existing City sewage lines in the Project vicinity. Based on the average generation factor of 93 gallons per day per capita (gpdc) from the City of Tulare Sewer System Master Plan, a total of 167,865 gallons per day (gpd) or 61.27 million gallons per year of wastewater is estimated to be generated by the proposed Project. This equates to approximately 188 acre-feet per year (AFY). The Tulare Water Pollution Control Facility has an estimated capacity of 6.0 mgd, and the proposed Project would produce 0.1672 mgd. Therefore, the proposed Project would contribute approximately 2.78% of the total remaining capacity of the TWPCF. Furthermore, the proposed Project site was analyzed for service to be provided in the City's Sewer System Master Planned and development here has been accounted for in this document. According to the Sewer System Master Plan, the system is large enough to accommodate a population of 115,000 in the year 2020, far above the current population of 70,693. Furthermore, the Project will likely cause an increase in population totaling to 1,957 individuals. Even with a Projected total population of 72,498 resulting from the Project, it is still far below the capacity of the sewer system.

The Tulare UWMP estimated the residential water demand within the service area to be 11,870 AF by 2040. The residential water demand in the service area (City of Tulare) with the Project was calculated to be 11,963 AF by 2040. The Project is expected to demand approximately 93 AF more water than the demand estimated by the Tulare UWMP. The Project will increase Tulare's water demand; however, because the City has no restrictions on groundwater pumping, it can be assumed that the water system can include the FNC Farming Project. However, the Project's pond will have an estimated yearly recharge of approximately 140 AF of groundwater. (See Section 7.3 of WSA) This results in the Project using 125.89 AFY Net Consumed Groundwater and would result in the Project demanding approximately 47 AF less than the estimated demand from the Tulare UWMP. Furthermore,

development on the Project site has been accounted for in the document on the Proposed Improvements map (City of Tulare Water Master Plan, Figure 5.2), which details the extent of future water system expansion. Therefore, expansion of the water system on the Project has been planned by the City, and the current water system has more than enough capacity to meet the expected demands of the Project.

The Project proposes an on-site stormwater retention basin to retain all stormwater, which is planned to be located in the 5.47-acre park in the center of the neighborhood. The basin would hold 30 acre-feet of storm water, which equates to 1,306,800 cubic feet. The rational method, which is commonly used to estimate peak stormwater runoff, states that the peak runoff rate for this site would be 38 cubic feet/second, which the basin would have capacity for. All values used for the peak runoff rate were based on values from the City of Tulare Design Guidelines (2016) for storm water infrastructure and based on the Project site area.

It is not anticipated that the proposed Project would result in the relocation or construction of new or expanded wastewater treatment facilities, power plants, natural gas extraction facilities or telecommunication facilities, as current facilities have the capacity to accommodate demands associated with the Project. In the event that any of these facilities become required, they would be required to serve more than just the proposed Project and would be subject to separate environmental review and approval. The impact is *less than significant.*

b) Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less than Significant Impact: According to the Water Supply Assessment prepared by 4Creeks (Appendix F), the City of Tulare Public Water System provided approximately 16,938 acre-feet (AF) of drinking water for consumption for a population of 67,834 residents. The City's water supply source is comprised of 23 active wells that extract water from an underground aquifer. According to the City's Urban Water Management Plan (City of Tulare, 2020), the City is anticipated to supply 11,932 AF in the year 2040. The Tulare UWMP estimated the residential water demand within the service area to be 11,870 AF by 2040. The residential water demand in the service area with the Project was calculated to be 11,983 AF by 2040. The Project is expected to demand approximately 113 AF more water than the demand estimated by the Tulare UWMP. The Project will increase Tulare's water demand; however, because the City has no restrictions on groundwater pumping, it can be assumed that the water system can include the FNC Farming Project. However, the Project's pond will have an estimated yearly recharge of approximately 140 AF of groundwater. (See Section 7.3 of WSA) This results in the Project using 146 AFY Net Consumed Groundwater and would result in the Project demanding approximately 33 AF less than the estimated demand from the Tulare UWMP. Therefore, there are sufficient water supplies available to serve the Project and foreseeable future development.

The City engages in a variety of strategies to ensure that adequate water resources are available throughout normal, dry, and multiple dry years. These strategies include a water conservation staging ordinance, which establishes five progressively more restrictive stages of water conservation to be implemented during dry and consecutive-dry years. The city also utilizes conjunctive use techniques, which involve diverting excess surface water for groundwater recharge during wet years so that it will be available during dry years. The proposed Project is planned to be consistent with the 2020 UWMP, which demonstrates adequate water supply to serve development in the City. Additionally, Tulare General Plan Policy LU-P11.3 requires all new development to be responsible for expansion of existing facilities, such as water systems, made necessary to serve the new development. The use of these strategies greatly improves the City's control over water supply and demand, which provides water supply flexibility and significantly reduces the City's vulnerability in the event of dry and multiple dry years.

Based on average per-person water use in the State of California and average household size in the City of Tulare, water demand for the proposed 556-unit (additional 8 rural residential units included in WSA for a conservative estimate) residential development is estimated to be approximately 66,552 gallons of water daily, or 74.54 acre-feet per year. This would be a reduction in water demand for the Project site from the water demand for the existing agricultural use. Including the Projected excess water supply in 2040, the impact is *less than significant.*

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?

Less than Significant Impact: As previously discussed above for item a) in this section, wastewater generated by the Project would be collected and treated at the City's domestic wastewater treatment train (WWTT). Although the proposed Project will increase wastewater generation due to the addition of 556 residential units, the wastewater produced would not exceed the City's WWTF capacity of 6.0 MGD. The impact is *less than significant*.

d) Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less than Significant: Solid waste collection service will be provided by the City of Tulare and waste disposal will be provided by the County. Solid waste is anticipated as a result of Project implementation; however, the Project does not include any components that would generate excessive waste and the existing landfills have sufficient permitted capacity to accommodate the Project's solid waste disposal needs. The impact is *less than significant.*

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact: This proposed Project conforms to all applicable management and reduction statutes and regulations related to solid waste disposal. The development will comply with the adopted policies related to solid waste, and will comply with all applicable federal, state, and local statutes and regulations pertaining to disposal of solid waste, including recycling. Therefore, the proposed Project would have *no impact* on solid waste regulations.

XIX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☑
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☑	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☑

Environmental Setting

There are no State Responsibility Areas (SRAs) within the vicinity of the Project site, and the Project site is not categorized as a "Very High" Fire Hazard Severity Zone (FHSZ) by CalFire. This CEQA topic only applies to areas within an SRA or a Very High FHSZ.

Regulatory Setting

Fire Hazard Severity Zones: geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

Definitions:
Fire hazard severity zones: geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in

State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

Tulare Unit Strategic Fire Plan Key Goals and Objectives:

- *Support the implementation and maintenance of defensible space inspections around structures*
- *Analyze trends in fire cause and focus prevention and education efforts to modify behaviors and effect change to reduce ignitions within Tulare County*
- *Identify and evaluate wildland fire hazards and recognize assets at risk, collecting and analyzing data to determine fuel reduction Project, and other Projects.*
- *Assist landowners and local government in the evaluation of the need to retain and utilize features (e.g., roads, fire lines, water sources) developed during fire suppression efforts, taking into consideration those identified in previous planning efforts*

Tulare County Disaster Preparedness Guide (2011): *The Tulare County Preparedness Guide provides guidelines regarding disaster preparedness and evacuation planning for Tulare County residents.*

Discussion

a) Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact: The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. The Tulare Fire Department will review the Project to ensure the Project does not impair emergency response or emergency evacuation. Additionally, the proposed Project site is not located within an SRA or a Very High FHSZ. There is *no impact.*

b) Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact: The Project is located on a flat area of agricultural and urban land which is considered to be at little risk of fire. Additionally, the proposed Project site is not located within an SRA or a Very High FHSZ. There is *no impact.*

c) Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less than Significant Impact: The construction of the Project involves adding new local residential streets, and new and relocated utilities. Utilities such as emergency water sources and power lines would be included as part of the proposed development, however all improvements would be subject to City standards and Fire Chief approval. The proposed Project would not exacerbate fire risk and the impact would be *less than significant.*

d) Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes?

No Impact: The Project site is not located in an area designated as a Fire Hazard Severity Zone and lands associated with the Project site are relatively flat. Therefore, the Project would not be susceptible to downslope or downstream flooding or landslides as a result of post-fire instability or drainage changes. There is *no impact.*

XX. MANDATORY FINDINGS OF SIGNIFICANCE

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

Discussion

a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number, or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact with Mitigation: This initial study found the Project could have significant impacts on agricultural resources, biological resources, transportation, hydrology & water quality, geology & soils, cultural and Tribal cultural resources. However, implementation of the mitigation measures pertinent to the quality of the environment, fish and wildlife species habitat, biological communities, rare/endangered animal and plant

species, and California history and prehistory would ensure that impacts are *less than significant with mitigation incorporation.*

b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?

Potentially Significant Impact: CEQA Guidelines Section 15064(h) states that a Lead Agency shall consider whether the cumulative impact of a Project is significant and whether the effects of the Project are cumulatively considerable. The assessment of the significance of the cumulative effects of a Project must, therefore, be conducted in connection with the effects of past Projects, other current Projects, and probable future Projects. Cumulative Projects in Tulare County would have the potential to continue to convert agricultural lands and resources to non-agricultural uses, resulting in a significant cumulative impact. The County General Plan EIR found a significant and unavoidable impact for conversion of farmland due to development that may occur in the County (Tulare County 2012). The General Plan EIR found a significant impact at both the county level and in the Project area. Ultimately, even with implementation of Mitigation Measure AG-1, the proposed Project when combined with Projects in the County would be cumulatively significant and unavoidable for agricultural resources. Impacts would be *potentially significant*.

c) Does the Project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant Impact: The analyses of environmental issues contained in this Initial Study indicate that the Project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the Project design to reduce all potentially significant impacts to less than significant, which results in a *less than significant* impact to this checklist item.

MITIGATION MONITORING AND REPORTING PROGRAM

As required by Public Resources Code Section 21081.6, subd. (a)(1), a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Project in order to monitor the implementation of the mitigation measures that have been adopted for the Project. This Mitigation Monitoring and Reporting Program (MMRP) has been created based upon the findings of the Initial study (IS/MND) for the FNC Farming Subdivision Project in the City of Tulare.

The first column of the table identifies the mitigation measure. The second column names the party responsible for carrying out the required action. The third column, "Timing of Mitigation Measure" identifies the time the mitigation measure should be initiated. The fourth column, "Responsible Party for Monitoring," names the party ensuring that the mitigation measure is implemented. The last column will be used by the City to ensure that the individual mitigation measures have been monitored.

Plan checking and verification of mitigation compliance shall be the responsibility of the City of Tulare.

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
AG-1: Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion: ○ Funding and/or purchasing agricultural conservation easements which shall be managed and maintained by an appropriate entity; ○ Purchasing credits from an established agricultural farmland mitigation bank; ○ Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or ○ Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above. The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the Project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage	City of Tulare	Prior to Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
calculation, along with written evidence of compliance. Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.				
Mitigation Measure 1: Swainson's Hawk Nesting Habitat A. **Protocol Surveys:** If construction, grading, or project-related improvements are to commence between March 1 and September 15, a qualified biologist with expertise in Swainson's hawk shall conduct protocol surveys of potential nesting habitat within 0.5 mile of any ground disturbing activities prior to initiation of such activities. Protocol level surveys shall be conducted in conformance with the "Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern," (https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds) (June 2, 2010) hereby incorporated by references. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes	City of Tulare	30 days Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
and observations, and timing of surveys. If construction work begins after September 15 and ends before March 1 (outside of the breeding season), impacts to the Swainson's hawk would be avoided. Surveys would not be required for work conducted during this part of the year. A written report with the pre-construction survey results must be provided to the Planning Department and CDFW within 30 days prior to commencement of construction-related activities. The report shall include: the date of the report, authors, and affiliations, contact information, introduction, methods, study location, including map, results, discussion, and literature cited. B. **Nest Avoidance**. If the required protocol surveys show there are no active nests within 0.5-mile of construction activities, then no additional mitigation for nest disturbance will be required. If nesting Swainson's hawks are observed within 0.5-mile of the project site, the project applicant must implement CDFW pre- approved mitigation measures to avoid nest impacts during construction. These measures include: 1. All project-related activities with the potential to cause nest abandonment or forced fledging of young shall be avoided until the young have fledged. 2. If disturbances, habitat conversions, or other project-related activities, that may cause nest abandonment or forced fledging, are necessary, within the nest protection buffer zone (0.5-mile), monitoring of the nest site by a qualified				

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
raptor biologist, funded by the project applicant, shall be required, to determine if the nest is abandoned. If the nest is abandoned, but the nestlings are still alive, the project proponent is required to fund the recovery and hacking, that is the controlled release of captive reared young, of the nestling. 3. The project applicant shall be required to coordinate with CDFW to determine if project activities with the potential to cause disturbance to nesting Swainson's hawks within the 0.5-mile buffer may proceed with a reduced nest buffer and an approved biological monitor. CDFW may authorize a reduced nest buffer with the presence of a monitoring biologist during construction activities to ensure that he nest is not disturbed. 4. Routine disturbances such as agricultural activities, commuter traffic, and routine maintenance activities within 0.5-mile of an active nest are not prohibited. C. **Foraging Impacts**: Generally, CDFW requires mitigation for foraging habitat based on the presence of active nests within 10 miles of the project. If an active nest site is identified within ten miles of the project site, the project proponent will be required by CDFW to provide off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the project site.				
Mitigation Measure 2A: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den Survey: If project-related activities are scheduled between	City of Tulare	14 days Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
February 1 to August 31 (the typical nesting season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14) calendar days prior to the beginning of Project-related activities. The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.				
Mitigation Measure 2B: Active Nests or Roosts or Burrows or Dens If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. If an occupied burrowing owl burrow is located the Biologist will consult with CDFW	City of Tulare	Ongoing during Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair. If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.				
Mitigation Measure 3: Project Delay If a lapse in project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.	City of Tulare	Prior to restarting construction	City of Tulare	
CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant	City of Tulare	Ongoing During Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.				
CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the	City of Tulare	Ongoing During Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.				
HAZ-1 Soil Sampling: Prior to the commencement of construction activities, the Project site must undergo soil sampling conducted by a qualified environmental consultant. A Soil Sampling and Analysis Plan (SSAP) will be developed and approved by the relevant regulatory agency. Soil samples will be collected and analyzed for contaminants, and the results will be compared to DTSC thresholds. If contamination is found, a Remediation Plan will be implemented to address the issue before construction begins. All activities will be documented and clearance from the regulatory agency must be obtained before proceeding with construction.	City of Tulare	Prior to Construction	City of Tulare	
Mitigation Measure HYD-1: Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit. • Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City. • The City shall review noticing documentation prior to approval of	City of Tulare	Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
the grading permit. City monitoring staff will inspect the site during construction for compliance.				
Mitigation Measure HYD-2: The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to: • Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust; • A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures; • Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand	City of Tulare	45 Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
bagging, and soil stabilizers will be used; • Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.				
Mitigation Measure HYD-3: A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following: • Runoff shall be directed away from trash and loading dock areas; • Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;	City of Tulare	Ongoing through Construction and Operation	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
• Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and • Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.				

Supporting Information and Sources

1. AB 3098 List
2. EMFAC2014
3. Tulare County General Plan (2012)
4. City of Tulare General Plan (2014)
5. Tulare County General Plan EIR
6. City of Tulare Urban Water Management Plan (2015)
7. City of Tulare Climate Action Plan
8. Tulare County Climate Action Plan
9. City of Tulare Code of Ordinances
10. Engineering Standards, City of Tulare (2016)
11. SJVAPCD Regulations and Guidelines
12. FEMA Flood Maps
13. California Air Resources Board's (CARB's) Air Quality and Land Use Handbook
14. 2019 California Environmental Quality Act CEQA Guidelines
15. California Building Code (CBC)
16. California Stormwater Pollution Prevention Program (SWPPP)
17. "Construction Noise Handbook." U.S. Department of Transportation/Federal Highway Administration.
18. Government Code Section 65962.5
19. California Environmental Protection Agency (CEPA) San Joaquin Valley Air Pollution Control District Mitigation Measures (http://www.valleyair.org/transportation/Mitigation-Measures.pdf)
20. Southern California Edison 2019 Power Content Label
21. Sacramento Valley Land Use/Water Supply Analysis Guidebook (2007)
22. Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.
23. California Department of Transportation Scenic Roadways
24. EPA, Intergovernmental Panel on Climate Change
25. "The Untapped Potential of California's Urban Water Supply: Water Efficiency, Water Reuse, and Stormwater Capture" – Pacific Institute (2022)
26. State of California Governor's Office of Planning and Research
27. Cultural Resources Assessment – SOAR Environmental Consulting, Inc.
28. Biological Resource Assessment – SOAR Environmental Consulting, Inc.
29. Traffic Study – Ruettgers & Schuler Civil Engineers

30. NWCA Guidebook (2006)

31. https://lafco.co.tulare.ca.us/msr/city-of-tulare-msr-update/

32. U.S. Census Bureau Quickfacts – Tulare City, CA

33. Code of Federal Regulations Title 33

34. Sackett v. Environmental Protection Agency

Appendix A

CalEEMod Report

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

FNC Farming Subdivision

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	5.34	Acre	5.47	232,610.40	0
Single Family Housing	556.00	Dwelling Unit	127.03	1,000,800.00	1590

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Specific Values - according to submitted final site plan. Rural residential portion (7.8-acres) is not included as no development is proposed.

Construction Phase -

Woodstoves - There will be no woodstoves in the proposed homes.

Area Coating -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	5.34	5.47

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	LotAcreage	180.52	127.03

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2655	2.5934	2.1312	4.7900e-003	1.9191	0.1088	2.0280	0.7908	0.1001	0.8909	0.0000	421.9065	421.9065	0.1331	3.2000e-004	425.3309
2026	0.3764	3.5021	3.4507	8.2800e-003	1.2556	0.1398	1.3953	0.4553	0.1287	0.5840	0.0000	731.3389	731.3389	0.2141	4.8400e-003	738.1361
2027	0.2907	2.2522	3.0460	8.2800e-003	0.3943	0.0738	0.4681	0.1068	0.0694	0.1762	0.0000	759.3688	759.3688	0.0777	0.0405	773.3815
2028	0.2826	2.2349	2.9878	8.1300e-003	0.3928	0.0734	0.4662	0.1064	0.0691	0.1755	0.0000	747.3942	747.3942	0.0769	0.0393	761.0304
2029	0.2771	2.2350	2.9585	8.0600e-003	0.3943	0.0736	0.4679	0.1068	0.0692	0.1760	0.0000	741.7380	741.7380	0.0768	0.0385	755.1232
2030	0.2633	1.6364	2.9335	8.4900e-003	0.3943	0.0240	0.4183	0.1068	0.0237	0.1305	0.0000	774.4720	774.4720	0.0190	0.0376	786.1531
2031	0.2572	1.6306	2.9029	8.4100e-003	0.3943	0.0239	0.4182	0.1068	0.0236	0.1304	0.0000	767.6257	767.6257	0.0186	0.0368	779.0676
2032	0.2531	1.6319	2.8888	8.3600e-003	0.3958	0.0239	0.4197	0.1072	0.0237	0.1309	0.0000	764.4919	764.4919	0.0184	0.0363	775.7708
2033	0.2465	1.6155	2.8450	8.2300e-003	0.3928	0.0236	0.4165	0.1064	0.0234	0.1298	0.0000	753.3343	753.3343	0.0180	0.0355	764.3490
2034	0.2425	1.6117	2.8259	8.1700e-003	0.3928	0.0236	0.4164	0.1064	0.0233	0.1297	0.0000	748.5576	748.5576	0.0178	0.0349	759.4144
2035	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2340	747.2340	0.0167	0.0346	757.9715
2036	0.2288	1.5193	2.8267	8.1900e-003	0.3958	0.0161	0.4120	0.1072	0.0159	0.1231	0.0000	750.0969	750.0969	0.0167	0.0348	760.8756
2037	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2340	747.2340	0.0167	0.0346	757.9715
2038	0.2107	1.3156	2.6524	7.1600e-003	0.3087	0.0180	0.3267	0.0836	0.0178	0.1014	0.0000	651.6926	651.6926	0.0157	0.0269	660.0870
2039	4.3308	0.4335	1.4221	2.6200e-003	0.0333	0.0157	0.0489	8.8500e-003	0.0157	0.0245	0.0000	228.1643	228.1643	8.2500e-003	4.7000e-004	228.5110
2040	5.1775	0.0466	0.1553	3.6000e-004	0.0289	5.0000e-004	0.0294	7.6900e-003	5.0000e-004	8.1900e-003	0.0000	33.5551	33.5551	7.6000e-004	3.9000e-004	33.6893
Maximum	**5.1775**	**3.5021**	**3.4507**	**8.4900e-003**	**1.9191**	**0.1398**	**2.0280**	**0.7908**	**0.1287**	**0.8909**	**0.0000**	**774.4720**	**774.4720**	**0.2141**	**0.0405**	**786.1531**

2.1 Overall Construction

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2655	2.5934	2.1312	4.7900e-003	0.8717	0.1088	0.9805	0.3580	0.1001	0.4581	0.0000	421.9061	421.9061	0.1331	3.2000e-004	425.3304
2026	0.3764	3.5021	3.4507	8.2800e-003	0.5985	0.1398	0.7382	0.2139	0.1287	0.3426	0.0000	731.3381	731.3381	0.2141	4.8400e-003	738.1353
2027	0.2907	2.2522	3.0460	8.2800e-003	0.3943	0.0738	0.4681	0.1068	0.0694	0.1762	0.0000	759.3684	759.3684	0.0777	0.0405	773.3811
2028	0.2826	2.2349	2.9878	8.1300e-003	0.3928	0.0734	0.4662	0.1064	0.0691	0.1755	0.0000	747.3939	747.3939	0.0769	0.0393	761.0300
2029	0.2771	2.2350	2.9585	8.0600e-003	0.3943	0.0736	0.4679	0.1068	0.0692	0.1760	0.0000	741.7376	741.7376	0.0768	0.0385	755.1229
2030	0.2633	1.6364	2.9335	8.4900e-003	0.3943	0.0240	0.4183	0.1068	0.0237	0.1305	0.0000	774.4716	774.4716	0.0190	0.0376	786.1526
2031	0.2572	1.6306	2.9029	8.4100e-003	0.3943	0.0239	0.4182	0.1068	0.0236	0.1304	0.0000	767.6253	767.6253	0.0186	0.0368	779.0672
2032	0.2531	1.6319	2.8888	8.3600e-003	0.3958	0.0239	0.4197	0.1072	0.0237	0.1309	0.0000	764.4914	764.4914	0.0184	0.0363	775.7704
2033	0.2465	1.6155	2.8450	8.2300e-003	0.3928	0.0236	0.4165	0.1064	0.0234	0.1298	0.0000	753.3338	753.3338	0.0180	0.0355	764.3486
2034	0.2425	1.6117	2.8259	8.1700e-003	0.3928	0.0236	0.4164	0.1064	0.0233	0.1297	0.0000	748.5572	748.5572	0.0178	0.0349	759.4140
2035	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2336	747.2336	0.0167	0.0346	757.9711
2036	0.2288	1.5193	2.8267	8.1900e-003	0.3958	0.0161	0.4120	0.1072	0.0159	0.1231	0.0000	750.0965	750.0965	0.0167	0.0348	760.8752
2037	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2336	747.2336	0.0167	0.0346	757.9711
2038	0.2107	1.3156	2.6524	7.1600e-003	0.3087	0.0180	0.3267	0.0836	0.0178	0.1014	0.0000	651.6922	651.6922	0.0157	0.0269	660.0866
2039	4.3308	0.4335	1.4221	2.6200e-003	0.0333	0.0157	0.0489	8.8500e-003	0.0157	0.0245	0.0000	228.1640	228.1640	8.2500e-003	4.7000e-004	228.5108
2040	5.1775	0.0466	0.1553	3.6000e-004	0.0289	5.0000e-004	0.0294	7.6900e-003	5.0000e-004	8.1900e-003	0.0000	33.5551	33.5551	7.6000e-004	3.9000e-004	33.6893
Maximum	**5.1775**	**3.5021**	**3.4507**	**8.4900e-003**	**0.8717**	**0.1398**	**0.9805**	**0.3580**	**0.1287**	**0.4581**	**0.0000**	**774.4716**	**774.4716**	**0.2141**	**0.0405**	**786.1526**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	21.63	0.00	19.93	26.75	0.00	21.36	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-1-2025	6-30-2025	0.9035	0.9035
2	7-1-2025	9-30-2025	0.9303	0.9303
3	10-1-2025	12-31-2025	1.0168	1.0168
4	1-1-2026	3-31-2026	0.9944	0.9944
5	4-1-2026	6-30-2026	1.0055	1.0055
6	7-1-2026	9-30-2026	1.0166	1.0166
7	10-1-2026	12-31-2026	0.8654	0.8654
8	1-1-2027	3-31-2027	0.6317	0.6317
9	4-1-2027	6-30-2027	0.6302	0.6302
10	7-1-2027	9-30-2027	0.6371	0.6371
11	10-1-2027	12-31-2027	0.6457	0.6457
12	1-1-2028	3-31-2028	0.6346	0.6346
13	4-1-2028	6-30-2028	0.6261	0.6261
14	7-1-2028	9-30-2028	0.6330	0.6330
15	10-1-2028	12-31-2028	0.6416	0.6416
16	1-1-2029	3-31-2029	0.6237	0.6237
17	4-1-2029	6-30-2029	0.6222	0.6222
18	7-1-2029	9-30-2029	0.6290	0.6290
19	10-1-2029	12-31-2029	0.6376	0.6376
20	1-1-2030	3-31-2030	0.4728	0.4728
21	4-1-2030	6-30-2030	0.4695	0.4695
22	7-1-2030	9-30-2030	0.4747	0.4747
23	10-1-2030	12-31-2030	0.4833	0.4833

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

24	**1-1-2031**	**3-31-2031**	0.4697	0.4697
25	**4-1-2031**	**6-30-2031**	0.4664	0.4664
26	**7-1-2031**	**9-30-2031**	0.4715	0.4715
27	**10-1-2031**	**12-31-2031**	0.4802	0.4802
28	**1-1-2032**	**3-31-2032**	0.4724	0.4724
29	**4-1-2032**	**6-30-2032**	0.4637	0.4637
30	**7-1-2032**	**9-30-2032**	0.4688	0.4688
31	**10-1-2032**	**12-31-2032**	0.4776	0.4776
32	**1-1-2033**	**3-31-2033**	0.4650	0.4650
33	**4-1-2033**	**6-30-2033**	0.4614	0.4614
34	**7-1-2033**	**9-30-2033**	0.4665	0.4665
35	**10-1-2033**	**12-31-2033**	0.4753	0.4753
36	**1-1-2034**	**3-31-2034**	0.4630	0.4630
37	**4-1-2034**	**6-30-2034**	0.4593	0.4593
38	**7-1-2034**	**9-30-2034**	0.4644	0.4644
39	**10-1-2034**	**12-31-2034**	0.4733	0.4733
40	**1-1-2035**	**3-31-2035**	0.4334	0.4334
41	**4-1-2035**	**6-30-2035**	0.4293	0.4293
42	**7-1-2035**	**9-30-2035**	0.4341	0.4341
43	**10-1-2035**	**12-31-2035**	0.4430	0.4430
44	**1-1-2036**	**3-31-2036**	0.4382	0.4382
45	**4-1-2036**	**6-30-2036**	0.4293	0.4293
46	**7-1-2036**	**9-30-2036**	0.4341	0.4341
47	**10-1-2036**	**12-31-2036**	0.4430	0.4430
48	**1-1-2037**	**3-31-2037**	0.4334	0.4334
49	**4-1-2037**	**6-30-2037**	0.4293	0.4293
50	**7-1-2037**	**9-30-2037**	0.4341	0.4341
51	**10-1-2037**	**12-31-2037**	0.4430	0.4430
52	**1-1-2038**	**3-31-2038**	0.4334	0.4334

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

53	**4-1-2038**	**6-30-2038**	0.4293	0.4293
54	**7-1-2038**	**9-30-2038**	0.4341	0.4341
55	**10-1-2038**	**12-31-2038**	0.2281	0.2281
56	**1-1-2039**	**3-31-2039**	0.1946	0.1946
57	**4-1-2039**	**6-30-2039**	0.1967	0.1967
58	**7-1-2039**	**9-30-2039**	1.5192	1.5192
59	**10-1-2039**	**12-31-2039**	2.8394	2.8394
60	**1-1-2040**	**3-31-2040**	2.8065	2.8065
61	**4-1-2040**	**6-30-2040**	2.4364	2.4364
		Highest	2.8394	2.8394

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5872	0.6390	27.7233	0.0783		3.8750	3.8750		3.8750	3.8750	513.5471	247.6070	761.1541	2.4118	4.4200e-003	822.7651
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	2.3699	3.8235	22.0553	0.0517	5.4598	0.0441	5.5039	1.4608	0.0414	1.5022	0.0000	4,924.9711	4,924.9711	0.2512	0.2539	5,006.9191
Waste						0.0000	0.0000		0.0000	0.0000	116.2854	0.0000	116.2854	6.8723	0.0000	288.0922
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.8877	64.3804	1.1849	0.0284	102.4695
Total	**10.0291**	**5.0783**	**50.0407**	**0.1339**	**5.4598**	**3.9689**	**9.4287**	**1.4608**	**3.9662**	**5.4270**	**641.3252**	**6,724.9319**	**7,366.2571**	**10.8002**	**0.3079**	**7,728.0063**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.9740	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	2.3600	3.7929	21.8845	0.0512	5.4052	0.0437	5.4489	1.4462	0.0410	1.4872	0.0000	4,877.1582	4,877.1582	0.2497	0.2519	4,958.4659
Waste						0.0000	0.0000		0.0000	0.0000	116.2854	0.0000	116.2854	6.8723	0.0000	288.0922
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.8877	64.3804	1.1849	0.0284	102.4695
Total	**7.4061**	**4.4563**	**26.2711**	**0.0554**	**5.4052**	**0.1164**	**5.5216**	**1.4462**	**0.1137**	**1.5599**	**127.7781**	**6,436.2557**	**6,564.0339**	**8.3933**	**0.3014**	**6,863.6932**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**26.15**	**12.25**	**47.50**	**58.65**	**1.00**	**97.07**	**41.44**	**1.00**	**97.13**	**71.26**	**80.08**	**4.29**	**10.89**	**22.29**	**2.09**	**11.18**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2025	9/15/2025	5	120	
2	Grading	Grading	9/16/2025	11/23/2026	5	310	
3	Building Construction	Building Construction	11/24/2026	10/11/2038	5	3100	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Paving	Paving	10/12/2038	8/15/2039	5	220	
5	Architectural Coating	Architectural Coating	8/16/2039	6/18/2040	5	220	

Acres of Grading (Site Preparation Phase): 180

Acres of Grading (Grading Phase): 930

Acres of Paving: 0

Residential Indoor: 2,026,620; Residential Outdoor: 675,540; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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

Trips and VMT

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	298.00	98.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	60.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1794	0.0000	1.1794	0.6062	0.0000	0.6062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1484	1.5140	1.0747	2.2900e-003		0.0652	0.0652		0.0600	0.0600	0.0000	200.8019	200.8019	0.0649	0.0000	202.4255
Total	**0.1484**	**1.5140**	**1.0747**	**2.2900e-003**	**1.1794**	**0.0652**	**1.2446**	**0.6062**	**0.0600**	**0.6661**	**0.0000**	**200.8019**	**200.8019**	**0.0649**	**0.0000**	**202.4255**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1900e-003	2.0600e-003	0.0250	7.0000e-005	8.6000e-003	4.0000e-005	8.6400e-003	2.2900e-003	4.0000e-005	2.3200e-003	0.0000	6.5709	6.5709	1.9000e-004	1.9000e-004	6.6316
Total	**3.1900e-003**	**2.0600e-003**	**0.0250**	**7.0000e-005**	**8.6000e-003**	**4.0000e-005**	**8.6400e-003**	**2.2900e-003**	**4.0000e-005**	**2.3200e-003**	**0.0000**	**6.5709**	**6.5709**	**1.9000e-004**	**1.9000e-004**	**6.6316**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5307	0.0000	0.5307	0.2728	0.0000	0.2728	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1484	1.5140	1.0747	2.2900e-003		0.0652	0.0652		0.0600	0.0600	0.0000	200.8017	200.8017	0.0649	0.0000	202.4253
Total	**0.1484**	**1.5140**	**1.0747**	**2.2900e-003**	**0.5307**	**0.0652**	**0.5960**	**0.2728**	**0.0600**	**0.3328**	**0.0000**	**200.8017**	**200.8017**	**0.0649**	**0.0000**	**202.4253**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1900e-003	2.0600e-003	0.0250	7.0000e-005	8.6000e-003	4.0000e-005	8.6400e-003	2.2900e-003	4.0000e-005	2.3200e-003	0.0000	6.5709	6.5709	1.9000e-004	1.9000e-004	6.6316
Total	**3.1900e-003**	**2.0600e-003**	**0.0250**	**7.0000e-005**	**8.6000e-003**	**4.0000e-005**	**8.6400e-003**	**2.2900e-003**	**4.0000e-005**	**2.3200e-003**	**0.0000**	**6.5709**	**6.5709**	**1.9000e-004**	**1.9000e-004**	**6.6316**

3.3 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7250	0.0000	0.7250	0.1807	0.0000	0.1807	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1117	1.0758	1.0138	2.3900e-003		0.0435	0.0435		0.0401	0.0401	0.0000	209.8489	209.8489	0.0679	0.0000	211.5457
Total	**0.1117**	**1.0758**	**1.0138**	**2.3900e-003**	**0.7250**	**0.0435**	**0.7685**	**0.1807**	**0.0401**	**0.2208**	**0.0000**	**209.8489**	**209.8489**	**0.0679**	**0.0000**	**211.5457**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2800e-003	1.4700e-003	0.0178	5.0000e-005	6.1300e-003	3.0000e-005	6.1600e-003	1.6300e-003	3.0000e-005	1.6600e-003	0.0000	4.6848	4.6848	1.3000e-004	1.3000e-004	4.7281
Total	**2.2800e-003**	**1.4700e-003**	**0.0178**	**5.0000e-005**	**6.1300e-003**	**3.0000e-005**	**6.1600e-003**	**1.6300e-003**	**3.0000e-005**	**1.6600e-003**	**0.0000**	**4.6848**	**4.6848**	**1.3000e-004**	**1.3000e-004**	**4.7281**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3262	0.0000	0.3262	0.0813	0.0000	0.0813	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1117	1.0758	1.0138	2.3900e-003		0.0435	0.0435		0.0401	0.0401	0.0000	209.8487	209.8487	0.0679	0.0000	211.5454
Total	**0.1117**	**1.0758**	**1.0138**	**2.3900e-003**	**0.3262**	**0.0435**	**0.3698**	**0.0813**	**0.0401**	**0.1214**	**0.0000**	**209.8487**	**209.8487**	**0.0679**	**0.0000**	**211.5454**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2800e-003	1.4700e-003	0.0178	5.0000e-005	6.1300e-003	3.0000e-005	6.1600e-003	1.6300e-003	3.0000e-005	1.6600e-003	0.0000	4.6848	4.6848	1.3000e-004	1.3000e-004	4.7281
Total	**2.2800e-003**	**1.4700e-003**	**0.0178**	**5.0000e-005**	**6.1300e-003**	**3.0000e-005**	**6.1600e-003**	**1.6300e-003**	**3.0000e-005**	**1.6600e-003**	**0.0000**	**4.6848**	**4.6848**	**1.3000e-004**	**1.3000e-004**	**4.7281**

3.3 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1947	0.0000	1.1947	0.4389	0.0000	0.4389	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3380	3.2554	3.0676	7.2300e-003		0.1318	0.1318		0.1212	0.1212	0.0000	634.9974	634.9974	0.2054	0.0000	640.1317
Total	**0.3380**	**3.2554**	**3.0676**	**7.2300e-003**	**1.1947**	**0.1318**	**1.3265**	**0.4389**	**0.1212**	**0.5601**	**0.0000**	**634.9974**	**634.9974**	**0.2054**	**0.0000**	**640.1317**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3900e-003	3.9600e-003	0.0503	1.4000e-004	0.0186	8.0000e-005	0.0186	4.9300e-003	7.0000e-005	5.0100e-003	0.0000	13.8160	13.8160	3.7000e-004	3.8000e-004	13.9376
Total	**6.3900e-003**	**3.9600e-003**	**0.0503**	**1.4000e-004**	**0.0186**	**8.0000e-005**	**0.0186**	**4.9300e-003**	**7.0000e-005**	**5.0100e-003**	**0.0000**	**13.8160**	**13.8160**	**3.7000e-004**	**3.8000e-004**	**13.9376**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5376	0.0000	0.5376	0.1975	0.0000	0.1975	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3380	3.2553	3.0676	7.2300e-003		0.1318	0.1318		0.1212	0.1212	0.0000	634.9966	634.9966	0.2054	0.0000	640.1309
Total	**0.3380**	**3.2553**	**3.0676**	**7.2300e-003**	**0.5376**	**0.1318**	**0.6694**	**0.1975**	**0.1212**	**0.3187**	**0.0000**	**634.9966**	**634.9966**	**0.2054**	**0.0000**	**640.1309**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3900e-003	3.9600e-003	0.0503	1.4000e-004	0.0186	8.0000e-005	0.0186	4.9300e-003	7.0000e-005	5.0100e-003	0.0000	13.8160	13.8160	3.7000e-004	3.8000e-004	13.9376
Total	**6.3900e-003**	**3.9600e-003**	**0.0503**	**1.4000e-004**	**0.0186**	**8.0000e-005**	**0.0186**	**4.9300e-003**	**7.0000e-005**	**5.0100e-003**	**0.0000**	**13.8160**	**13.8160**	**3.7000e-004**	**3.8000e-004**	**13.9376**

3.4 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0191	0.1746	0.2252	3.8000e-004		7.3900e-003	7.3900e-003		6.9500e-003	6.9500e-003	0.0000	32.4687	32.4687	7.6300e-003	0.0000	32.6595
Total	**0.0191**	**0.1746**	**0.2252**	**3.8000e-004**		**7.3900e-003**	**7.3900e-003**		**6.9500e-003**	**6.9500e-003**	**0.0000**	**32.4687**	**32.4687**	**7.6300e-003**	**0.0000**	**32.6595**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4400e-003	0.0611	0.0176	2.6000e-004	9.0700e-003	4.0000e-004	9.4700e-003	2.6200e-003	3.8000e-004	3.0000e-003	0.0000	25.3185	25.3185	1.1000e-004	3.7900e-003	26.4514
Worker	0.0114	7.0800e-003	0.0901	2.6000e-004	0.0332	1.5000e-004	0.0334	8.8400e-003	1.3000e-004	8.9700e-003	0.0000	24.7383	24.7383	6.6000e-004	6.8000e-004	24.9560
Total	**0.0129**	**0.0682**	**0.1076**	**5.2000e-004**	**0.0423**	**5.5000e-004**	**0.0429**	**0.0115**	**5.1000e-004**	**0.0120**	**0.0000**	**50.0568**	**50.0568**	**7.7000e-004**	**4.4700e-003**	**51.4074**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0191	0.1746	0.2252	3.8000e-004		7.3900e-003	7.3900e-003		6.9500e-003	6.9500e-003	0.0000	32.4687	32.4687	7.6300e-003	0.0000	32.6595
Total	**0.0191**	**0.1746**	**0.2252**	**3.8000e-004**		**7.3900e-003**	**7.3900e-003**		**6.9500e-003**	**6.9500e-003**	**0.0000**	**32.4687**	**32.4687**	**7.6300e-003**	**0.0000**	**32.6595**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4400e-003	0.0611	0.0176	2.6000e-004	9.0700e-003	4.0000e-004	9.4700e-003	2.6200e-003	3.8000e-004	3.0000e-003	0.0000	25.3185	25.3185	1.1000e-004	3.7900e-003	26.4514
Worker	0.0114	7.0800e-003	0.0901	2.6000e-004	0.0332	1.5000e-004	0.0334	8.8400e-003	1.3000e-004	8.9700e-003	0.0000	24.7383	24.7383	6.6000e-004	6.8000e-004	24.9560
Total	**0.0129**	**0.0682**	**0.1076**	**5.2000e-004**	**0.0423**	**5.5000e-004**	**0.0429**	**0.0115**	**5.1000e-004**	**0.0120**	**0.0000**	**50.0568**	**50.0568**	**7.7000e-004**	**4.4700e-003**	**51.4074**

3.4 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0132	0.5655	0.1617	2.4100e-003	0.0846	3.6600e-003	0.0882	0.0244	3.5000e-003	0.0279	0.0000	231.2462	231.2462	1.0100e-003	0.0346	241.5791
Worker	0.0991	0.0594	0.7852	2.3500e-003	0.3098	1.2800e-003	0.3110	0.0824	1.1800e-003	0.0835	0.0000	225.4677	225.4677	5.5600e-003	5.9100e-003	227.3689
Total	**0.1123**	**0.6249**	**0.9469**	**4.7600e-003**	**0.3943**	**4.9400e-003**	**0.3993**	**0.1068**	**4.6800e-003**	**0.1115**	**0.0000**	**456.7139**	**456.7139**	**6.5700e-003**	**0.0405**	**468.9480**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0132	0.5655	0.1617	2.4100e-003	0.0846	3.6600e-003	0.0882	0.0244	3.5000e-003	0.0279	0.0000	231.2462	231.2462	1.0100e-003	0.0346	241.5791
Worker	0.0991	0.0594	0.7852	2.3500e-003	0.3098	1.2800e-003	0.3110	0.0824	1.1800e-003	0.0835	0.0000	225.4677	225.4677	5.5600e-003	5.9100e-003	227.3689
Total	**0.1123**	**0.6249**	**0.9469**	**4.7600e-003**	**0.3943**	**4.9400e-003**	**0.3993**	**0.1068**	**4.6800e-003**	**0.1115**	**0.0000**	**456.7139**	**456.7139**	**6.5700e-003**	**0.0405**	**468.9480**

3.4 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4953	301.4953	0.0709	0.0000	303.2671
Total	**0.1778**	**1.6211**	**2.0910**	**3.5000e-003**		**0.0686**	**0.0686**		**0.0645**	**0.0645**	**0.0000**	**301.4953**	**301.4953**	**0.0709**	**0.0000**	**303.2671**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0129	0.5602	0.1593	2.3500e-003	0.0842	3.6200e-003	0.0879	0.0244	3.4600e-003	0.0278	0.0000	225.8452	225.8452	9.8000e-004	0.0337	235.9226
Worker	0.0920	0.0537	0.7375	2.2700e-003	0.3086	1.1900e-003	0.3098	0.0820	1.1000e-003	0.0831	0.0000	220.0537	220.0537	5.0600e-003	5.5700e-003	221.8407
Total	**0.1049**	**0.6138**	**0.8968**	**4.6200e-003**	**0.3928**	**4.8100e-003**	**0.3976**	**0.1064**	**4.5600e-003**	**0.1110**	**0.0000**	**445.8990**	**445.8990**	**6.0400e-003**	**0.0393**	**457.7633**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4949	301.4949	0.0709	0.0000	303.2667
Total	**0.1778**	**1.6211**	**2.0910**	**3.5000e-003**		**0.0686**	**0.0686**		**0.0645**	**0.0645**	**0.0000**	**301.4949**	**301.4949**	**0.0709**	**0.0000**	**303.2667**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0129	0.5602	0.1593	2.3500e-003	0.0842	3.6200e-003	0.0879	0.0244	3.4600e-003	0.0278	0.0000	225.8452	225.8452	9.8000e-004	0.0337	235.9226
Worker	0.0920	0.0537	0.7375	2.2700e-003	0.3086	1.1900e-003	0.3098	0.0820	1.1000e-003	0.0831	0.0000	220.0537	220.0537	5.0600e-003	5.5700e-003	221.8407
Total	**0.1049**	**0.6138**	**0.8968**	**4.6200e-003**	**0.3928**	**4.8100e-003**	**0.3976**	**0.1064**	**4.5600e-003**	**0.1110**	**0.0000**	**445.8990**	**445.8990**	**6.0400e-003**	**0.0393**	**457.7633**

3.4 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0127	0.5586	0.1584	2.3200e-003	0.0846	3.6100e-003	0.0882	0.0244	3.4500e-003	0.0279	0.0000	222.2860	222.2860	9.7000e-004	0.0332	232.1907
Worker	0.0859	0.0491	0.7011	2.2300e-003	0.3098	1.1200e-003	0.3109	0.0824	1.0300e-003	0.0834	0.0000	216.7971	216.7971	4.6500e-003	5.3200e-003	218.4990
Total	**0.0986**	**0.6077**	**0.8595**	**4.5500e-003**	**0.3943**	**4.7300e-003**	**0.3991**	**0.1068**	**4.4800e-003**	**0.1113**	**0.0000**	**439.0831**	**439.0831**	**5.6200e-003**	**0.0385**	**450.6897**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0127	0.5586	0.1584	2.3200e-003	0.0846	3.6100e-003	0.0882	0.0244	3.4500e-003	0.0279	0.0000	222.2860	222.2860	9.7000e-004	0.0332	232.1907
Worker	0.0859	0.0491	0.7011	2.2300e-003	0.3098	1.1200e-003	0.3109	0.0824	1.0300e-003	0.0834	0.0000	216.7971	216.7971	4.6500e-003	5.3200e-003	218.4990
Total	**0.0986**	**0.6077**	**0.8595**	**4.5500e-003**	**0.3943**	**4.7300e-003**	**0.3991**	**0.1068**	**4.4800e-003**	**0.1113**	**0.0000**	**439.0831**	**439.0831**	**5.6200e-003**	**0.0385**	**450.6897**

3.4 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0336**	**343.0336**	**0.0138**	**0.0000**	**343.3777**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0126	0.5559	0.1572	2.2800e-003	0.0846	3.5800e-003	0.0882	0.0244	3.4300e-003	0.0279	0.0000	218.2624	218.2624	9.5000e-004	0.0325	227.9757
Worker	0.0799	0.0450	0.6678	2.1700e-003	0.3098	1.0400e-003	0.3108	0.0824	9.6000e-004	0.0833	0.0000	213.1760	213.1760	4.2800e-003	5.0900e-003	214.7997
Total	**0.0924**	**0.6009**	**0.8250**	**4.4500e-003**	**0.3943**	**4.6200e-003**	**0.3990**	**0.1068**	**4.3900e-003**	**0.1112**	**0.0000**	**431.4384**	**431.4384**	**5.2300e-003**	**0.0376**	**442.7754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0332**	**343.0332**	**0.0138**	**0.0000**	**343.3773**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2030

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0126	0.5559	0.1572	2.2800e-003	0.0846	3.5800e-003	0.0882	0.0244	3.4300e-003	0.0279	0.0000	218.2624	218.2624	9.5000e-004	0.0325	227.9757
Worker	0.0799	0.0450	0.6678	2.1700e-003	0.3098	1.0400e-003	0.3108	0.0824	9.6000e-004	0.0833	0.0000	213.1760	213.1760	4.2800e-003	5.0900e-003	214.7997
Total	**0.0924**	**0.6009**	**0.8250**	**4.4500e-003**	**0.3943**	**4.6200e-003**	**0.3990**	**0.1068**	**4.3900e-003**	**0.1112**	**0.0000**	**431.4384**	**431.4384**	**5.2300e-003**	**0.0376**	**442.7754**

3.4 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0336**	**343.0336**	**0.0138**	**0.0000**	**343.3777**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2031

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.5538	0.1565	2.2400e-003	0.0846	3.5700e-003	0.0881	0.0244	3.4100e-003	0.0279	0.0000	214.6627	214.6627	9.3000e-004	0.0320	224.2062
Worker	0.0739	0.0413	0.6379	2.1300e-003	0.3098	9.7000e-004	0.3107	0.0824	9.0000e-004	0.0833	0.0000	209.9294	209.9294	3.9400e-003	4.8900e-003	211.4837
Total	**0.0864**	**0.5951**	**0.7944**	**4.3700e-003**	**0.3943**	**4.5400e-003**	**0.3989**	**0.1068**	**4.3100e-003**	**0.1111**	**0.0000**	**424.5921**	**424.5921**	**4.8700e-003**	**0.0368**	**435.6900**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0332**	**343.0332**	**0.0138**	**0.0000**	**343.3773**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2031

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.5538	0.1565	2.2400e-003	0.0846	3.5700e-003	0.0881	0.0244	3.4100e-003	0.0279	0.0000	214.6627	214.6627	9.3000e-004	0.0320	224.2062
Worker	0.0739	0.0413	0.6379	2.1300e-003	0.3098	9.7000e-004	0.3107	0.0824	9.0000e-004	0.0833	0.0000	209.9294	209.9294	3.9400e-003	4.8900e-003	211.4837
Total	**0.0864**	**0.5951**	**0.7944**	**4.3700e-003**	**0.3943**	**4.5400e-003**	**0.3989**	**0.1068**	**4.3100e-003**	**0.1111**	**0.0000**	**424.5921**	**424.5921**	**4.8700e-003**	**0.0368**	**435.6900**

3.4 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1715	1.0394	2.1166	4.0600e-003		0.0194	0.0194		0.0194	0.0194	0.0000	344.3479	344.3479	0.0138	0.0000	344.6933
Total	**0.1715**	**1.0394**	**2.1166**	**4.0600e-003**		**0.0194**	**0.0194**		**0.0194**	**0.0194**	**0.0000**	**344.3479**	**344.3479**	**0.0138**	**0.0000**	**344.6933**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2032

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0124	0.5540	0.1569	2.2100e-003	0.0849	3.5600e-003	0.0885	0.0245	3.4100e-003	0.0279	0.0000	212.2762	212.2762	9.3000e-004	0.0316	221.7056
Worker	0.0692	0.0385	0.6153	2.0900e-003	0.3110	9.1000e-004	0.3119	0.0827	8.4000e-004	0.0835	0.0000	207.8677	207.8677	3.6600e-003	4.7400e-003	209.3718
Total	**0.0816**	**0.5925**	**0.7722**	**4.3000e-003**	**0.3958**	**4.4700e-003**	**0.4003**	**0.1072**	**4.2500e-003**	**0.1115**	**0.0000**	**420.1439**	**420.1439**	**4.5900e-003**	**0.0363**	**431.0775**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1715	1.0394	2.1166	4.0600e-003		0.0194	0.0194		0.0194	0.0194	0.0000	344.3475	344.3475	0.0138	0.0000	344.6929
Total	**0.1715**	**1.0394**	**2.1166**	**4.0600e-003**		**0.0194**	**0.0194**		**0.0194**	**0.0194**	**0.0000**	**344.3475**	**344.3475**	**0.0138**	**0.0000**	**344.6929**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2032

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0124	0.5540	0.1569	2.2100e-003	0.0849	3.5600e-003	0.0885	0.0245	3.4100e-003	0.0279	0.0000	212.2762	212.2762	9.3000e-004	0.0316	221.7056
Worker	0.0692	0.0385	0.6153	2.0900e-003	0.3110	9.1000e-004	0.3119	0.0827	8.4000e-004	0.0835	0.0000	207.8677	207.8677	3.6600e-003	4.7400e-003	209.3718
Total	**0.0816**	**0.5925**	**0.7722**	**4.3000e-003**	**0.3958**	**4.4700e-003**	**0.4003**	**0.1072**	**4.2500e-003**	**0.1115**	**0.0000**	**420.1439**	**420.1439**	**4.5900e-003**	**0.0363**	**431.0775**

3.4 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7193	341.7193	0.0137	0.0000	342.0621
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7193**	**341.7193**	**0.0137**	**0.0000**	**342.0621**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2033

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5483	0.1558	2.1700e-003	0.0842	3.5200e-003	0.0878	0.0244	3.3700e-003	0.0277	0.0000	207.8607	207.8607	9.1000e-004	0.0309	217.0873
Worker	0.0640	0.0357	0.5888	2.0400e-003	0.3086	8.5000e-004	0.3094	0.0820	7.8000e-004	0.0828	0.0000	203.7543	203.7543	3.3800e-003	4.5700e-003	205.1997
Total	**0.0763**	**0.5840**	**0.7446**	**4.2100e-003**	**0.3928**	**4.3700e-003**	**0.3972**	**0.1064**	**4.1500e-003**	**0.1105**	**0.0000**	**411.6149**	**411.6149**	**4.2900e-003**	**0.0355**	**422.2870**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7189	341.7189	0.0137	0.0000	342.0617
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7189**	**341.7189**	**0.0137**	**0.0000**	**342.0617**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2033

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5483	0.1558	2.1700e-003	0.0842	3.5200e-003	0.0878	0.0244	3.3700e-003	0.0277	0.0000	207.8607	207.8607	9.1000e-004	0.0309	217.0873
Worker	0.0640	0.0357	0.5888	2.0400e-003	0.3086	8.5000e-004	0.3094	0.0820	7.8000e-004	0.0828	0.0000	203.7543	203.7543	3.3800e-003	4.5700e-003	205.1997
Total	**0.0763**	**0.5840**	**0.7446**	**4.2100e-003**	**0.3928**	**4.3700e-003**	**0.3972**	**0.1064**	**4.1500e-003**	**0.1105**	**0.0000**	**411.6149**	**411.6149**	**4.2900e-003**	**0.0355**	**422.2870**

3.4 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7193	341.7193	0.0137	0.0000	342.0621
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7193**	**341.7193**	**0.0137**	**0.0000**	**342.0621**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2034

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1560	2.1400e-003	0.0842	3.5000e-003	0.0877	0.0244	3.3500e-003	0.0277	0.0000	205.3112	205.3112	9.0000e-004	0.0305	214.4188
Worker	0.0600	0.0337	0.5695	2.0100e-003	0.3086	8.0000e-004	0.3094	0.0820	7.3000e-004	0.0828	0.0000	201.5271	201.5271	3.1500e-003	4.4600e-003	202.9336
Total	**0.0723**	**0.5802**	**0.7255**	**4.1500e-003**	**0.3928**	**4.3000e-003**	**0.3971**	**0.1064**	**4.0800e-003**	**0.1105**	**0.0000**	**406.8383**	**406.8383**	**4.0500e-003**	**0.0350**	**417.3524**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7189	341.7189	0.0137	0.0000	342.0617
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7189**	**341.7189**	**0.0137**	**0.0000**	**342.0617**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2034

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1560	2.1400e-003	0.0842	3.5000e-003	0.0877	0.0244	3.3500e-003	0.0277	0.0000	205.3112	205.3112	9.0000e-004	0.0305	214.4188
Worker	0.0600	0.0337	0.5695	2.0100e-003	0.3086	8.0000e-004	0.3094	0.0820	7.3000e-004	0.0828	0.0000	201.5271	201.5271	3.1500e-003	4.4600e-003	202.9336
Total	**0.0723**	**0.5802**	**0.7255**	**4.1500e-003**	**0.3928**	**4.3000e-003**	**0.3971**	**0.1064**	**4.0800e-003**	**0.1105**	**0.0000**	**406.8383**	**406.8383**	**4.0500e-003**	**0.0350**	**417.3524**

3.4 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0336**	**343.0336**	**0.0128**	**0.0000**	**343.3530**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
Total	**0.0691**	**0.5789**	**0.7125**	**4.1200e-003**	**0.3943**	**4.2400e-003**	**0.3986**	**0.1068**	**4.0300e-003**	**0.1108**	**0.0000**	**404.2004**	**404.2004**	**3.8700e-003**	**0.0346**	**414.6185**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0332**	**343.0332**	**0.0128**	**0.0000**	**343.3526**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
Total	**0.0691**	**0.5789**	**0.7125**	**4.1200e-003**	**0.3943**	**4.2400e-003**	**0.3986**	**0.1068**	**4.0300e-003**	**0.1108**	**0.0000**	**404.2004**	**404.2004**	**3.8700e-003**	**0.0346**	**414.6185**

3.4 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1594	0.9381	2.1114	4.0600e-003		0.0118	0.0118		0.0118	0.0118	0.0000	344.3479	344.3479	0.0128	0.0000	344.6686
Total	**0.1594**	**0.9381**	**2.1114**	**4.0600e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**344.3479**	**344.3479**	**0.0128**	**0.0000**	**344.6686**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2036

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5487	0.1574	2.1300e-003	0.0849	3.5100e-003	0.0884	0.0245	3.3500e-003	0.0279	0.0000	204.6057	204.6057	9.1000e-004	0.0304	213.6767
Worker	0.0571	0.0324	0.5579	2.0000e-003	0.3110	7.5000e-004	0.3117	0.0827	6.9000e-004	0.0834	0.0000	201.1434	201.1434	2.9800e-003	4.4000e-003	202.5303
Total	**0.0694**	**0.5811**	**0.7153**	**4.1300e-003**	**0.3958**	**4.2600e-003**	**0.4001**	**0.1072**	**4.0400e-003**	**0.1113**	**0.0000**	**405.7490**	**405.7490**	**3.8900e-003**	**0.0348**	**416.2070**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1594	0.9381	2.1114	4.0600e-003		0.0118	0.0118		0.0118	0.0118	0.0000	344.3475	344.3475	0.0128	0.0000	344.6682
Total	**0.1594**	**0.9381**	**2.1114**	**4.0600e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**344.3475**	**344.3475**	**0.0128**	**0.0000**	**344.6682**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2036

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5487	0.1574	2.1300e-003	0.0849	3.5100e-003	0.0884	0.0245	3.3500e-003	0.0279	0.0000	204.6057	204.6057	9.1000e-004	0.0304	213.6767
Worker	0.0571	0.0324	0.5579	2.0000e-003	0.3110	7.5000e-004	0.3117	0.0827	6.9000e-004	0.0834	0.0000	201.1434	201.1434	2.9800e-003	4.4000e-003	202.5303
Total	**0.0694**	**0.5811**	**0.7153**	**4.1300e-003**	**0.3958**	**4.2600e-003**	**0.4001**	**0.1072**	**4.0400e-003**	**0.1113**	**0.0000**	**405.7490**	**405.7490**	**3.8900e-003**	**0.0348**	**416.2070**

3.4 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0336**	**343.0336**	**0.0128**	**0.0000**	**343.3530**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2037

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
Total	**0.0691**	**0.5789**	**0.7125**	**4.1200e-003**	**0.3943**	**4.2400e-003**	**0.3986**	**0.1068**	**4.0300e-003**	**0.1108**	**0.0000**	**404.2004**	**404.2004**	**3.8700e-003**	**0.0346**	**414.6185**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0332**	**343.0332**	**0.0128**	**0.0000**	**343.3526**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2037

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
Total	**0.0691**	**0.5789**	**0.7125**	**4.1200e-003**	**0.3943**	**4.2400e-003**	**0.3986**	**0.1068**	**4.0300e-003**	**0.1108**	**0.0000**	**404.2004**	**404.2004**	**3.8700e-003**	**0.0346**	**414.6185**

3.4 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1229	0.7233	1.6279	3.1300e-003		9.1300e-003	9.1300e-003		9.1300e-003	9.1300e-003	0.0000	265.4896	265.4896	9.8900e-003	0.0000	265.7368
Total	**0.1229**	**0.7233**	**1.6279**	**3.1300e-003**		**9.1300e-003**	**9.1300e-003**		**9.1300e-003**	**9.1300e-003**	**0.0000**	**265.4896**	**265.4896**	**9.8900e-003**	**0.0000**	**265.7368**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.5000e-003	0.4231	0.1214	1.6500e-003	0.0655	2.7000e-003	0.0682	0.0189	2.5900e-003	0.0215	0.0000	157.7494	157.7494	7.0000e-004	0.0234	164.7431
Worker	0.0440	0.0250	0.4301	1.5400e-003	0.2397	5.8000e-004	0.2403	0.0637	5.3000e-004	0.0643	0.0000	155.0800	155.0800	2.3000e-003	3.4000e-003	156.1493
Total	**0.0535**	**0.4480**	**0.5515**	**3.1900e-003**	**0.3052**	**3.2800e-003**	**0.3085**	**0.0827**	**3.1200e-003**	**0.0858**	**0.0000**	**312.8294**	**312.8294**	**3.0000e-003**	**0.0268**	**320.8924**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1229	0.7233	1.6279	3.1300e-003		9.1300e-003	9.1300e-003		9.1300e-003	9.1300e-003	0.0000	265.4893	265.4893	9.8900e-003	0.0000	265.7365
Total	**0.1229**	**0.7233**	**1.6279**	**3.1300e-003**		**9.1300e-003**	**9.1300e-003**		**9.1300e-003**	**9.1300e-003**	**0.0000**	**265.4893**	**265.4893**	**9.8900e-003**	**0.0000**	**265.7365**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.5000e-003	0.4231	0.1214	1.6500e-003	0.0655	2.7000e-003	0.0682	0.0189	2.5900e-003	0.0215	0.0000	157.7494	157.7494	7.0000e-004	0.0234	164.7431
Worker	0.0440	0.0250	0.4301	1.5400e-003	0.2397	5.8000e-004	0.2403	0.0637	5.3000e-004	0.0643	0.0000	155.0800	155.0800	2.3000e-003	3.4000e-003	156.1493
Total	**0.0535**	**0.4480**	**0.5515**	**3.1900e-003**	**0.3052**	**3.2800e-003**	**0.3085**	**0.0827**	**3.1200e-003**	**0.0858**	**0.0000**	**312.8294**	**312.8294**	**3.0000e-003**	**0.0268**	**320.8924**

3.5 Paving - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0336	0.1439	0.4667	8.3000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	71.0936	71.0936	2.7400e-003	0.0000	71.1620
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0336**	**0.1439**	**0.4667**	**8.3000e-004**		**5.5300e-003**	**5.5300e-003**		**5.5300e-003**	**5.5300e-003**	**0.0000**	**71.0936**	**71.0936**	**2.7400e-003**	**0.0000**	**71.1620**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	3.7000e-004	6.3200e-003	2.0000e-005	3.5200e-003	1.0000e-005	3.5300e-003	9.4000e-004	1.0000e-005	9.4000e-004	0.0000	2.2800	2.2800	3.0000e-005	5.0000e-005	2.2957
Total	**6.5000e-004**	**3.7000e-004**	**6.3200e-003**	**2.0000e-005**	**3.5200e-003**	**1.0000e-005**	**3.5300e-003**	**9.4000e-004**	**1.0000e-005**	**9.4000e-004**	**0.0000**	**2.2800**	**2.2800**	**3.0000e-005**	**5.0000e-005**	**2.2957**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0336	0.1439	0.4667	8.3000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	71.0935	71.0935	2.7400e-003	0.0000	71.1619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0336**	**0.1439**	**0.4667**	**8.3000e-004**		**5.5300e-003**	**5.5300e-003**		**5.5300e-003**	**5.5300e-003**	**0.0000**	**71.0935**	**71.0935**	**2.7400e-003**	**0.0000**	**71.1619**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	3.7000e-004	6.3200e-003	2.0000e-005	3.5200e-003	1.0000e-005	3.5300e-003	9.4000e-004	1.0000e-005	9.4000e-004	0.0000	2.2800	2.2800	3.0000e-005	5.0000e-005	2.2957
Total	**6.5000e-004**	**3.7000e-004**	**6.3200e-003**	**2.0000e-005**	**3.5200e-003**	**1.0000e-005**	**3.5300e-003**	**9.4000e-004**	**1.0000e-005**	**9.4000e-004**	**0.0000**	**2.2800**	**2.2800**	**3.0000e-005**	**5.0000e-005**	**2.2957**

3.5 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0918	0.3925	1.2735	2.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	194.0011	194.0011	7.4700e-003	0.0000	194.1878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0918**	**0.3925**	**1.2735**	**2.2600e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**194.0011**	**194.0011**	**7.4700e-003**	**0.0000**	**194.1878**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.0000e-003	0.0173	6.0000e-005	9.6200e-003	2.0000e-005	9.6400e-003	2.5600e-003	2.0000e-005	2.5800e-003	0.0000	6.2217	6.2217	9.0000e-005	1.4000e-004	6.2646
Total	**1.7600e-003**	**1.0000e-003**	**0.0173**	**6.0000e-005**	**9.6200e-003**	**2.0000e-005**	**9.6400e-003**	**2.5600e-003**	**2.0000e-005**	**2.5800e-003**	**0.0000**	**6.2217**	**6.2217**	**9.0000e-005**	**1.4000e-004**	**6.2646**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0918	0.3925	1.2735	2.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	194.0009	194.0009	7.4700e-003	0.0000	194.1875
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0918**	**0.3925**	**1.2735**	**2.2600e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**194.0009**	**194.0009**	**7.4700e-003**	**0.0000**	**194.1875**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.0000e-003	0.0173	6.0000e-005	9.6200e-003	2.0000e-005	9.6400e-003	2.5600e-003	2.0000e-005	2.5800e-003	0.0000	6.2217	6.2217	9.0000e-005	1.4000e-004	6.2646
Total	**1.7600e-003**	**1.0000e-003**	**0.0173**	**6.0000e-005**	**9.6200e-003**	**2.0000e-005**	**9.6400e-003**	**2.5600e-003**	**2.0000e-005**	**2.5800e-003**	**0.0000**	**6.2217**	**6.2217**	**9.0000e-005**	**1.4000e-004**	**6.2646**

3.6 Architectural Coating - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.2270					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8300e-003	0.0375	0.0888	1.5000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	12.6386	12.6386	4.7000e-004	0.0000	12.6503
Total	**4.2329**	**0.0375**	**0.0888**	**1.5000e-004**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**12.6386**	**12.6386**	**4.7000e-004**	**0.0000**	**12.6503**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3400e-003	2.4600e-003	0.0424	1.5000e-004	0.0237	6.0000e-005	0.0237	6.2900e-003	5.0000e-005	6.3400e-003	0.0000	15.3029	15.3029	2.3000e-004	3.4000e-004	15.4085
Total	**4.3400e-003**	**2.4600e-003**	**0.0424**	**1.5000e-004**	**0.0237**	**6.0000e-005**	**0.0237**	**6.2900e-003**	**5.0000e-005**	**6.3400e-003**	**0.0000**	**15.3029**	**15.3029**	**2.3000e-004**	**3.4000e-004**	**15.4085**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.2270					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8300e-003	0.0375	0.0888	1.5000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	12.6386	12.6386	4.7000e-004	0.0000	12.6503
Total	**4.2329**	**0.0375**	**0.0888**	**1.5000e-004**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**12.6386**	**12.6386**	**4.7000e-004**	**0.0000**	**12.6503**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3400e-003	2.4600e-003	0.0424	1.5000e-004	0.0237	6.0000e-005	0.0237	6.2900e-003	5.0000e-005	6.3400e-003	0.0000	15.3029	15.3029	2.3000e-004	3.4000e-004	15.4085
Total	**4.3400e-003**	**2.4600e-003**	**0.0424**	**1.5000e-004**	**0.0237**	**6.0000e-005**	**0.0237**	**6.2900e-003**	**5.0000e-005**	**6.3400e-003**	**0.0000**	**15.3029**	**15.3029**	**2.3000e-004**	**3.4000e-004**	**15.4085**

3.6 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.1664					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9500e-003	0.0440	0.1084	1.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	15.4472	15.4472	5.4000e-004	0.0000	15.4608
Total	**5.1733**	**0.0440**	**0.1084**	**1.8000e-004**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**15.4472**	**15.4472**	**5.4000e-004**	**0.0000**	**15.4608**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1400e-003	2.5900e-003	0.0469	1.8000e-004	0.0289	5.0000e-005	0.0290	7.6900e-003	5.0000e-005	7.7400e-003	0.0000	18.1079	18.1079	2.1000e-004	3.9000e-004	18.2285
Total	**4.1400e-003**	**2.5900e-003**	**0.0469**	**1.8000e-004**	**0.0289**	**5.0000e-005**	**0.0290**	**7.6900e-003**	**5.0000e-005**	**7.7400e-003**	**0.0000**	**18.1079**	**18.1079**	**2.1000e-004**	**3.9000e-004**	**18.2285**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.1664					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9500e-003	0.0440	0.1084	1.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	15.4472	15.4472	5.4000e-004	0.0000	15.4608
Total	**5.1733**	**0.0440**	**0.1084**	**1.8000e-004**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**15.4472**	**15.4472**	**5.4000e-004**	**0.0000**	**15.4608**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1400e-003	2.5900e-003	0.0469	1.8000e-004	0.0289	5.0000e-005	0.0290	7.6900e-003	5.0000e-005	7.7400e-003	0.0000	18.1079	18.1079	2.1000e-004	3.9000e-004	18.2285
Total	**4.1400e-003**	**2.5900e-003**	**0.0469**	**1.8000e-004**	**0.0289**	**5.0000e-005**	**0.0290**	**7.6900e-003**	**5.0000e-005**	**7.7400e-003**	**0.0000**	**18.1079**	**18.1079**	**2.1000e-004**	**3.9000e-004**	**18.2285**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.3600	3.7929	21.8845	0.0512	5.4052	0.0437	5.4489	1.4462	0.0410	1.4872	0.0000	4,877.1582	4,877.1582	0.2497	0.2519	4,958.4659
Unmitigated	2.3699	3.8235	22.0553	0.0517	5.4598	0.0441	5.5039	1.4608	0.0414	1.5022	0.0000	4,924.9711	4,924.9711	0.2512	0.2539	5,006.9191

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	4.17	10.47	11.69	13,110	12,979
Single Family Housing	5,248.64	5,304.24	4753.80	14,617,649	14,471,473
Total	5,252.81	5,314.71	4,765.49	14,630,759	14,484,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.525357	0.051382	0.167800	0.162287	0.028850	0.007480	0.012195	0.015949	0.000630	0.000469	0.022910	0.001396	0.003296
Single Family Housing	0.525357	0.051382	0.167800	0.162287	0.028850	0.007480	0.012195	0.015949	0.000630	0.000469	0.022910	0.001396	0.003296

5.0 Energy Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
NaturalGas Mitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
NaturalGas Unmitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
Total		**0.0721**	**0.6158**	**0.2621**	**3.9300e-003**		**0.0498**	**0.0498**		**0.0498**	**0.0498**	**0.0000**	**713.2008**	**713.2008**	**0.0137**	**0.0131**	**717.4390**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
Total		**0.0721**	**0.6158**	**0.2621**	**3.9300e-003**		**0.0498**	**0.0498**		**0.0498**	**0.0498**	**0.0000**	**713.2008**	**713.2008**	**0.0137**	**0.0131**	**717.4390**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		**786.2653**	**0.0664**	**8.0400e-003**	**790.3215**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		**786.2653**	**0.0664**	**8.0400e-003**	**790.3215**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.9740	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
Unmitigated	7.5872	0.6390	27.7233	0.0783		3.8750	3.8750		3.8750	3.8750	513.5471	247.6070	761.1541	2.4118	4.4200e-003	822.7651

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9393					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.6132	0.5915	23.5988	0.0780		3.8521	3.8521		3.8521	3.8521	513.5471	240.8633	754.4104	2.4053	4.4200e-003	815.8599
Landscaping	0.1238	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
Total	**7.5872**	**0.6390**	**27.7233**	**0.0783**		**3.8750**	**3.8750**		**3.8750**	**3.8750**	**513.5471**	**247.6070**	**761.1541**	**2.4118**	**4.4200e-003**	**822.7651**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9393					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1238	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
Total	**4.9740**	**0.0475**	**4.1245**	**2.2000e-004**		**0.0229**	**0.0229**		**0.0229**	**0.0229**	**0.0000**	**6.7437**	**6.7437**	**6.4600e-003**	**0.0000**	**6.9052**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	64.3804	1.1849	0.0284	102.4695
Unmitigated	64.3804	1.1849	0.0284	102.4695

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.36251	3.9493	3.3000e-004	4.0000e-005	3.9696
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
Total		**64.3804**	**1.1849**	**0.0284**	**102.4695**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.36251	3.9493	3.3000e-004	4.0000e-005	3.9696
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
Total		**64.3804**	**1.1849**	**0.0284**	**102.4695**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	116.2854	6.8723	0.0000	288.0922
Unmitigated	116.2854	6.8723	0.0000	288.0922

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.46	0.0934	5.5200e-003	0.0000	0.2313
Single Family Housing	572.4	116.1920	6.8668	0.0000	287.8608
Total		**116.2854**	**6.8723**	**0.0000**	**288.0922**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.46	0.0934	5.5200e-003	0.0000	0.2313
Single Family Housing	572.4	116.1920	6.8668	0.0000	287.8608
Total		**116.2854**	**6.8723**	**0.0000**	**288.0922**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	556.00	Dwelling Unit	127.03	1,000,800.00	1929
City Park	5.47	Acre	5.47	238,273.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2005
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage and dwelling units based on final site plan.

Construction Phase -

Architectural Coating - Based on 2005 values.

Area Mitigation -

Area Coating -

Woodstoves - Probable value for BAU year.

Off-road Equipment -

Off-road Equipment -

Mobile Land Use Mitigation -

Energy Use - Using historical data

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	150.00
tblEnergyUse	NT24E	5,093.98	6,155.97
tblEnergyUse	NT24NG	6,005.20	3,723.00
tblEnergyUse	Refrigerator	1,251.38	827.00
tblEnergyUse	T24E	1,243.06	209.15
tblEnergyUse	T24NG	28,148.14	20,314.55
tblFireplaces	NumberWood	0.00	556.00
tblLandUse	LotAcreage	180.52	127.03
tblLandUse	Population	1,590.00	1,929.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
1991	2.5433	19.6137	10.0519	0.9971	2.1143	1.4159	3.5302	0.8970	1.4159	2.3129	0.0000	701.3530	701.3530	0.2079	0.0000	706.5508
1992	2.4570	18.5792	10.3625	0.9447	1.1310	1.3412	2.4722	0.3646	1.3412	1.7059	0.0000	675.1665	675.1665	0.2008	0.0000	680.1866
1993	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
1994	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
1995	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
1996	1.5282	9.4016	3.7571	0.5031	0.3306	0.7997	1.1303	0.0811	0.7997	0.8809	0.0000	344.3481	344.3481	0.1247	0.0000	347.4661
1997	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
1998	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
1999	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
2000	2.5731	11.4083	14.9032	0.0725	0.3949	0.6573	1.0521	0.1069	0.6498	0.7567	0.0000	1,024.1280	1,024.1280	0.1904	0.1078	1,061.0152
2001	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.0670	1,028.0670	0.1912	0.1082	1,065.0960
2002	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.0670	1,028.0670	0.1912	0.1082	1,065.0960
2003	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.0670	1,028.0670	0.1912	0.1082	1,065.0960
2004	1.8035	9.0490	9.3438	0.0554	0.2170	0.5294	0.7464	0.0587	0.5254	0.5841	0.0000	701.6716	701.6716	0.1366	0.0587	722.5714
2005	7.4408	2.4774	2.0414	0.0159	0.0449	0.1593	0.2042	0.0119	0.1592	0.1712	0.0000	186.7602	186.7602	0.0357	6.2800e-003	189.5220
2006	2.4416	0.1575	0.3582	1.0000e-003	0.0134	0.0111	0.0245	3.5600e-003	0.0111	0.0146	0.0000	22.0862	22.0862	4.0900e-003	1.8700e-003	22.7455
Maximum	**7.4408**	**19.6137**	**14.9605**	**0.9971**	**2.1143**	**1.4159**	**3.5302**	**0.8970**	**1.4159**	**2.3129**	**0.0000**	**1,028.0670**	**1,028.0670**	**0.2079**	**0.1082**	**1,065.0960**

2.1 Overall Construction

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
1991	2.5433	19.6137	10.0519	0.9971	2.1143	1.4159	3.5302	0.8970	1.4159	2.3129	0.0000	701.3522	701.3522	0.2079	0.0000	706.5500
1992	2.4570	18.5791	10.3625	0.9447	1.1310	1.3412	2.4722	0.3646	1.3412	1.7059	0.0000	675.1657	675.1657	0.2008	0.0000	680.1857
1993	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
1994	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
1995	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
1996	1.5282	9.4016	3.7571	0.5031	0.3306	0.7997	1.1303	0.0811	0.7997	0.8809	0.0000	344.3477	344.3477	0.1247	0.0000	347.4657
1997	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
1998	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
1999	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
2000	2.5731	11.4083	14.9031	0.0725	0.3949	0.6573	1.0521	0.1069	0.6498	0.7567	0.0000	1,024.1276	1,024.1276	0.1904	0.1078	1,061.0147
2001	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.0666	1,028.0666	0.1912	0.1082	1,065.0956
2002	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.0666	1,028.0666	0.1912	0.1082	1,065.0956
2003	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.0666	1,028.0666	0.1912	0.1082	1,065.0956
2004	1.8035	9.0490	9.3438	0.0554	0.2170	0.5294	0.7464	0.0587	0.5254	0.5841	0.0000	701.6712	701.6712	0.1366	0.0587	722.5710
2005	7.4408	2.4774	2.0414	0.0159	0.0449	0.1593	0.2042	0.0119	0.1592	0.1712	0.0000	186.7600	186.7600	0.0357	6.2800e-003	189.5218
2006	2.4416	0.1575	0.3582	1.0000e-003	0.0134	0.0111	0.0245	3.5600e-003	0.0111	0.0146	0.0000	22.0862	22.0862	4.0900e-003	1.8700e-003	22.7455
Maximum	**7.4408**	**19.6137**	**14.9605**	**0.9971**	**2.1143**	**1.4159**	**3.5302**	**0.8970**	**1.4159**	**2.3129**	**0.0000**	**1,028.0666**	**1,028.0666**	**0.2079**	**0.1082**	**1,065.0956**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-1991	3-31-1991	4.2016	4.2016
2	4-1-1991	6-30-1991	4.5841	4.5841
3	7-1-1991	9-30-1991	6.6712	6.6712
4	10-1-1991	12-31-1991	6.6712	6.6712
5	1-1-1992	3-31-1992	6.5986	6.5986
6	4-1-1992	6-30-1992	6.5986	6.5986
7	7-1-1992	9-30-1992	5.0907	5.0907
8	10-1-1992	12-31-1992	2.7414	2.7414
9	1-1-1993	3-31-1993	2.6818	2.6818
10	4-1-1993	6-30-1993	2.7116	2.7116
11	7-1-1993	9-30-1993	2.7414	2.7414
12	10-1-1993	12-31-1993	2.7414	2.7414
13	1-1-1994	3-31-1994	2.6818	2.6818
14	4-1-1994	6-30-1994	2.7116	2.7116
15	7-1-1994	9-30-1994	2.7414	2.7414
16	10-1-1994	12-31-1994	2.7414	2.7414
17	1-1-1995	3-31-1995	2.6818	2.6818
18	4-1-1995	6-30-1995	2.7116	2.7116
19	7-1-1995	9-30-1995	2.7414	2.7414
20	10-1-1995	12-31-1995	2.7414	2.7414
21	1-1-1996	3-31-1996	2.7116	2.7116
22	4-1-1996	6-30-1996	2.7116	2.7116
23	7-1-1996	9-30-1996	2.7414	2.7414

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

24	**10-1-1996**	**12-31-1996**	2.7414	2.7414
25	**1-1-1997**	**3-31-1997**	2.6818	2.6818
26	**4-1-1997**	**6-30-1997**	2.7116	2.7116
27	**7-1-1997**	**9-30-1997**	2.7414	2.7414
28	**10-1-1997**	**12-31-1997**	2.7414	2.7414
29	**1-1-1998**	**3-31-1998**	2.6818	2.6818
30	**4-1-1998**	**6-30-1998**	2.7116	2.7116
31	**7-1-1998**	**9-30-1998**	2.7414	2.7414
32	**10-1-1998**	**12-31-1998**	2.7414	2.7414
33	**1-1-1999**	**3-31-1999**	2.6818	2.6818
34	**4-1-1999**	**6-30-1999**	2.7116	2.7116
35	**7-1-1999**	**9-30-1999**	2.7414	2.7414
36	**10-1-1999**	**12-31-1999**	2.7414	2.7414
37	**1-1-2000**	**3-31-2000**	3.5579	3.5579
38	**4-1-2000**	**6-30-2000**	3.4508	3.4508
39	**7-1-2000**	**9-30-2000**	3.4887	3.4887
40	**10-1-2000**	**12-31-2000**	3.5970	3.5970
41	**1-1-2001**	**3-31-2001**	3.5188	3.5188
42	**4-1-2001**	**6-30-2001**	3.4508	3.4508
43	**7-1-2001**	**9-30-2001**	3.4887	3.4887
44	**10-1-2001**	**12-31-2001**	3.5970	3.5970
45	**1-1-2002**	**3-31-2002**	3.5188	3.5188
46	**4-1-2002**	**6-30-2002**	3.4508	3.4508
47	**7-1-2002**	**9-30-2002**	3.4887	3.4887
48	**10-1-2002**	**12-31-2002**	3.5970	3.5970
49	**1-1-2003**	**3-31-2003**	3.5188	3.5188
50	**4-1-2003**	**6-30-2003**	3.4508	3.4508
51	**7-1-2003**	**9-30-2003**	3.4887	3.4887
52	**10-1-2003**	**12-31-2003**	3.5970	3.5970

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

53	**1-1-2004**	**3-31-2004**	3.5579	3.5579
54	**4-1-2004**	**6-30-2004**	3.4508	3.4508
55	**7-1-2004**	**9-30-2004**	2.0364	2.0364
56	**10-1-2004**	**12-31-2004**	1.8208	1.8208
57	**1-1-2005**	**3-31-2005**	1.5459	1.5459
58	**4-1-2005**	**6-30-2005**	2.2822	2.2822
59	**7-1-2005**	**9-30-2005**	3.0514	3.0514
60	**10-1-2005**	**12-31-2005**	3.0554	3.0554
61	**1-1-2006**	**3-31-2006**	2.6236	2.6236
		Highest	6.6712	6.6712

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229
Waste						0.0000	0.0000		0.0000	0.0000	141.0605	0.0000	141.0605	8.3364	0.0000	349.4713
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.9838	64.4766	1.1849	0.0284	102.5661
Total	**116.5990**	**26.9549**	**256.5920**	**0.4084**	**5.4794**	**19.1768**	**24.6562**	**1.4693**	**19.1538**	**20.6231**	**1,985.9197**	**9,046.9735**	**11,032.8932**	**13.0962**	**1.0219**	**11,664.8173**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229
Waste						0.0000	0.0000		0.0000	0.0000	141.0605	0.0000	141.0605	8.3364	0.0000	349.4713
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.9838	64.4766	1.1849	0.0284	102.5661
Total	**116.5990**	**26.9549**	**256.5920**	**0.4084**	**5.4794**	**19.1768**	**24.6562**	**1.4693**	**19.1538**	**20.6231**	**1,985.9197**	**9,046.9735**	**11,032.8932**	**13.0962**	**1.0219**	**11,664.8173**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/1991	6/17/1991	5	120	
2	Grading	Grading	6/18/1991	8/24/1992	5	310	
3	Building Construction	Building Construction	8/25/1992	7/12/2004	5	3100	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Paving	Paving	7/13/2004	5/16/2005	5	220	
5	Architectural Coating	Architectural Coating	5/17/2005	3/20/2006	5	220	

Acres of Grading (Site Preparation Phase): 180

Acres of Grading (Grading Phase): 930

Acres of Paving: 0

Residential Indoor: 2,026,620; Residential Outdoor: 675,540; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	300.00	98.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	60.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 1991

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1794	0.0000	1.1794	0.6062	0.0000	0.6062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.9460	6.8970	2.5189	0.3579		0.5338	0.5338		0.5338	0.5338	0.0000	240.0277	240.0277	0.0773	0.0000	241.9605
Total	**0.9460**	**6.8970**	**2.5189**	**0.3579**	**1.1794**	**0.5338**	**1.7132**	**0.6062**	**0.5338**	**1.1399**	**0.0000**	**240.0277**	**240.0277**	**0.0773**	**0.0000**	**241.9605**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 1991

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					7.4400e-003	0.0000	7.4400e-003	1.8300e-003	0.0000	1.8300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**7.4400e-003**	**0.0000**	**7.4400e-003**	**1.8300e-003**	**0.0000**	**1.8300e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1794	0.0000	1.1794	0.6062	0.0000	0.6062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.9460	6.8970	2.5189	0.3579		0.5338	0.5338		0.5338	0.5338	0.0000	240.0274	240.0274	0.0773	0.0000	241.9602
Total	**0.9460**	**6.8970**	**2.5189**	**0.3579**	**1.1794**	**0.5338**	**1.7132**	**0.6062**	**0.5338**	**1.1399**	**0.0000**	**240.0274**	**240.0274**	**0.0773**	**0.0000**	**241.9602**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 1991

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					7.4400e-003	0.0000	7.4400e-003	1.8300e-003	0.0000	1.8300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**7.4400e-003**	**0.0000**	**7.4400e-003**	**1.8300e-003**	**0.0000**	**1.8300e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 1991

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9177	0.0000	0.9177	0.2866	0.0000	0.2866	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5973	12.7167	7.5330	0.6392		0.8822	0.8822		0.8822	0.8822	0.0000	461.3254	461.3254	0.1306	0.0000	464.5903
Total	**1.5973**	**12.7167**	**7.5330**	**0.6392**	**0.9177**	**0.8822**	**1.7999**	**0.2866**	**0.8822**	**1.1688**	**0.0000**	**461.3254**	**461.3254**	**0.1306**	**0.0000**	**464.5903**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 1991

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					9.7100e-003	0.0000	9.7100e-003	2.3800e-003	0.0000	2.3800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**9.7100e-003**	**0.0000**	**9.7100e-003**	**2.3800e-003**	**0.0000**	**2.3800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9177	0.0000	0.9177	0.2866	0.0000	0.2866	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5973	12.7166	7.5329	0.6392		0.8822	0.8822		0.8822	0.8822	0.0000	461.3248	461.3248	0.1306	0.0000	464.5897
Total	**1.5973**	**12.7166**	**7.5329**	**0.6392**	**0.9177**	**0.8822**	**1.7999**	**0.2866**	**0.8822**	**1.1688**	**0.0000**	**461.3248**	**461.3248**	**0.1306**	**0.0000**	**464.5897**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 1991

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					9.7100e-003	0.0000	9.7100e-003	2.3800e-003	0.0000	2.3800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**9.7100e-003**	**0.0000**	**9.7100e-003**	**2.3800e-003**	**0.0000**	**2.3800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 1992

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0020	0.0000	1.0020	0.3330	0.0000	0.3330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9145	15.2419	9.0289	0.7661		1.0574	1.0574		1.0574	1.0574	0.0000	552.9361	552.9361	0.1565	0.0000	556.8493
Total	**1.9145**	**15.2419**	**9.0289**	**0.7661**	**1.0020**	**1.0574**	**2.0594**	**0.3330**	**1.0574**	**1.3903**	**0.0000**	**552.9361**	**552.9361**	**0.1565**	**0.0000**	**556.8493**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 1992

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0116	0.0000	0.0116	2.8600e-003	0.0000	2.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0116**	**0.0000**	**0.0116**	**2.8600e-003**	**0.0000**	**2.8600e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0020	0.0000	1.0020	0.3330	0.0000	0.3330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9145	15.2419	9.0289	0.7661		1.0574	1.0574		1.0574	1.0574	0.0000	552.9354	552.9354	0.1565	0.0000	556.8487
Total	**1.9145**	**15.2419**	**9.0289**	**0.7661**	**1.0020**	**1.0574**	**2.0594**	**0.3330**	**1.0574**	**1.3903**	**0.0000**	**552.9354**	**552.9354**	**0.1565**	**0.0000**	**556.8487**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 1992

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0116	0.0000	0.0116	2.8600e-003	0.0000	2.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0116**	**0.0000**	**0.0116**	**2.8600e-003**	**0.0000**	**2.8600e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1992

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5425	3.3372	1.3336	0.1786		0.2839	0.2839		0.2839	0.2839	0.0000	122.2304	122.2304	0.0443	0.0000	123.3372
Total	**0.5425**	**3.3372**	**1.3336**	**0.1786**		**0.2839**	**0.2839**		**0.2839**	**0.2839**	**0.0000**	**122.2304**	**122.2304**	**0.0443**	**0.0000**	**123.3372**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1992

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0212	0.0000	0.0212	5.2100e-003	0.0000	5.2100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0961	0.0000	0.0961	0.0236	0.0000	0.0236	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.1173**	**0.0000**	**0.1173**	**0.0288**	**0.0000**	**0.0288**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5425	3.3372	1.3336	0.1786		0.2839	0.2839		0.2839	0.2839	0.0000	122.2303	122.2303	0.0443	0.0000	123.3371
Total	**0.5425**	**3.3372**	**1.3336**	**0.1786**		**0.2839**	**0.2839**		**0.2839**	**0.2839**	**0.0000**	**122.2303**	**122.2303**	**0.0443**	**0.0000**	**123.3371**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1992

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0212	0.0000	0.0212	5.2100e-003	0.0000	5.2100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0961	0.0000	0.0961	0.0236	0.0000	0.0236	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.1173**	**0.0000**	**0.1173**	**0.0288**	**0.0000**	**0.0288**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1993

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0338**	**343.0338**	**0.1243**	**0.0000**	**346.1399**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1993

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0334**	**343.0334**	**0.1243**	**0.0000**	**346.1395**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1993

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1994

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
Total	**1.5165**	**9.3299**	**3.7284**	**0.4992**		**0.7936**	**0.7936**		**0.7936**	**0.7936**	**0.0000**	**341.7195**	**341.7195**	**0.1238**	**0.0000**	**344.8137**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1994

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3280**	**0.0000**	**0.3280**	**0.0805**	**0.0000**	**0.0805**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
Total	**1.5165**	**9.3299**	**3.7284**	**0.4992**		**0.7936**	**0.7936**		**0.7936**	**0.7936**	**0.0000**	**341.7191**	**341.7191**	**0.1238**	**0.0000**	**344.8133**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1994

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3280**	**0.0000**	**0.3280**	**0.0805**	**0.0000**	**0.0805**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1995

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
Total	**1.5165**	**9.3299**	**3.7284**	**0.4992**		**0.7936**	**0.7936**		**0.7936**	**0.7936**	**0.0000**	**341.7195**	**341.7195**	**0.1238**	**0.0000**	**344.8137**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1995

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3280**	**0.0000**	**0.3280**	**0.0805**	**0.0000**	**0.0805**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
Total	**1.5165**	**9.3299**	**3.7284**	**0.4992**		**0.7936**	**0.7936**		**0.7936**	**0.7936**	**0.0000**	**341.7191**	**341.7191**	**0.1238**	**0.0000**	**344.8133**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1995

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3280**	**0.0000**	**0.3280**	**0.0805**	**0.0000**	**0.0805**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1996

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5282	9.4016	3.7571	0.5031		0.7997	0.7997		0.7997	0.7997	0.0000	344.3481	344.3481	0.1247	0.0000	347.4661
Total	**1.5282**	**9.4016**	**3.7571**	**0.5031**		**0.7997**	**0.7997**		**0.7997**	**0.7997**	**0.0000**	**344.3481**	**344.3481**	**0.1247**	**0.0000**	**347.4661**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1996

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0598	0.0000	0.0598	0.0147	0.0000	0.0147	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2708	0.0000	0.2708	0.0665	0.0000	0.0665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3306**	**0.0000**	**0.3306**	**0.0811**	**0.0000**	**0.0811**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5282	9.4016	3.7571	0.5031		0.7997	0.7997		0.7997	0.7997	0.0000	344.3477	344.3477	0.1247	0.0000	347.4657
Total	**1.5282**	**9.4016**	**3.7571**	**0.5031**		**0.7997**	**0.7997**		**0.7997**	**0.7997**	**0.0000**	**344.3477**	**344.3477**	**0.1247**	**0.0000**	**347.4657**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1996

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0598	0.0000	0.0598	0.0147	0.0000	0.0147	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2708	0.0000	0.2708	0.0665	0.0000	0.0665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3306**	**0.0000**	**0.3306**	**0.0811**	**0.0000**	**0.0811**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1997

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0338**	**343.0338**	**0.1243**	**0.0000**	**346.1399**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1997

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0334**	**343.0334**	**0.1243**	**0.0000**	**346.1395**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1997

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1998

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0338**	**343.0338**	**0.1243**	**0.0000**	**346.1399**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1998

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0334**	**343.0334**	**0.1243**	**0.0000**	**346.1395**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1998

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 1999

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0338**	**343.0338**	**0.1243**	**0.0000**	**346.1399**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1999

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
Total	**1.5224**	**9.3657**	**3.7427**	**0.5012**		**0.7967**	**0.7967**		**0.7967**	**0.7967**	**0.0000**	**343.0334**	**343.0334**	**0.1243**	**0.0000**	**346.1395**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 1999

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.3293**	**0.0000**	**0.3293**	**0.0808**	**0.0000**	**0.0808**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2000

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1342	6.2741	2.9067	0.0395		0.4932	0.4932		0.4932	0.4932	0.0000	341.7193	341.7193	0.0924	0.0000	344.0287
Total	**1.1342**	**6.2741**	**2.9067**	**0.0395**		**0.4932**	**0.4932**		**0.4932**	**0.4932**	**0.0000**	**341.7193**	**341.7193**	**0.0924**	**0.0000**	**344.0287**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4453	3.8215	2.3089	0.0273	0.0842	0.1499	0.2341	0.0243	0.1434	0.1678	0.0000	318.4513	318.4513	0.0213	0.0470	332.9804
Worker	0.9936	1.3127	9.6876	5.7400e-003	0.3107	0.0141	0.3248	0.0826	0.0131	0.0957	0.0000	363.9574	363.9574	0.0768	0.0608	384.0062
Total	**1.4389**	**5.1342**	**11.9965**	**0.0330**	**0.3949**	**0.1641**	**0.5589**	**0.1069**	**0.1565**	**0.2635**	**0.0000**	**682.4087**	**682.4087**	**0.0981**	**0.1078**	**716.9865**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1342	6.2741	2.9067	0.0395		0.4932	0.4932		0.4932	0.4932	0.0000	341.7189	341.7189	0.0924	0.0000	344.0282
Total	**1.1342**	**6.2741**	**2.9067**	**0.0395**		**0.4932**	**0.4932**		**0.4932**	**0.4932**	**0.0000**	**341.7189**	**341.7189**	**0.0924**	**0.0000**	**344.0282**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4453	3.8215	2.3089	0.0273	0.0842	0.1499	0.2341	0.0243	0.1434	0.1678	0.0000	318.4513	318.4513	0.0213	0.0470	332.9804
Worker	0.9936	1.3127	9.6876	5.7400e-003	0.3107	0.0141	0.3248	0.0826	0.0131	0.0957	0.0000	363.9574	363.9574	0.0768	0.0608	384.0062
Total	**1.4389**	**5.1342**	**11.9965**	**0.0330**	**0.3949**	**0.1641**	**0.5589**	**0.1069**	**0.1565**	**0.2635**	**0.0000**	**682.4087**	**682.4087**	**0.0981**	**0.1078**	**716.9865**

3.4 Building Construction - 2001

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9179	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0336	343.0336	0.0927	0.0000	345.3518
Total	**1.1386**	**6.2982**	**2.9179**	**0.0397**		**0.4951**	**0.4951**		**0.4951**	**0.4951**	**0.0000**	**343.0336**	**343.0336**	**0.0927**	**0.0000**	**345.3518**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2001

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
Total	**1.4444**	**5.1540**	**12.0426**	**0.0331**	**0.3964**	**0.1647**	**0.5611**	**0.1073**	**0.1572**	**0.2645**	**0.0000**	**685.0333**	**685.0333**	**0.0984**	**0.1082**	**719.7441**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9178	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0332	343.0332	0.0927	0.0000	345.3514
Total	**1.1386**	**6.2982**	**2.9178**	**0.0397**		**0.4951**	**0.4951**		**0.4951**	**0.4951**	**0.0000**	**343.0332**	**343.0332**	**0.0927**	**0.0000**	**345.3514**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2001

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
Total	**1.4444**	**5.1540**	**12.0426**	**0.0331**	**0.3964**	**0.1647**	**0.5611**	**0.1073**	**0.1572**	**0.2645**	**0.0000**	**685.0333**	**685.0333**	**0.0984**	**0.1082**	**719.7441**

3.4 Building Construction - 2002

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9179	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0336	343.0336	0.0927	0.0000	345.3518
Total	**1.1386**	**6.2982**	**2.9179**	**0.0397**		**0.4951**	**0.4951**		**0.4951**	**0.4951**	**0.0000**	**343.0336**	**343.0336**	**0.0927**	**0.0000**	**345.3518**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2002

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
Total	**1.4444**	**5.1540**	**12.0426**	**0.0331**	**0.3964**	**0.1647**	**0.5611**	**0.1073**	**0.1572**	**0.2645**	**0.0000**	**685.0333**	**685.0333**	**0.0984**	**0.1082**	**719.7441**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9178	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0332	343.0332	0.0927	0.0000	345.3514
Total	**1.1386**	**6.2982**	**2.9178**	**0.0397**		**0.4951**	**0.4951**		**0.4951**	**0.4951**	**0.0000**	**343.0332**	**343.0332**	**0.0927**	**0.0000**	**345.3514**

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3.4 Building Construction - 2002

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
Total	**1.4444**	**5.1540**	**12.0426**	**0.0331**	**0.3964**	**0.1647**	**0.5611**	**0.1073**	**0.1572**	**0.2645**	**0.0000**	**685.0333**	**685.0333**	**0.0984**	**0.1082**	**719.7441**

3.4 Building Construction - 2003

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9179	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0336	343.0336	0.0927	0.0000	345.3518
Total	**1.1386**	**6.2982**	**2.9179**	**0.0397**		**0.4951**	**0.4951**		**0.4951**	**0.4951**	**0.0000**	**343.0336**	**343.0336**	**0.0927**	**0.0000**	**345.3518**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2003

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
Total	**1.4444**	**5.1540**	**12.0426**	**0.0331**	**0.3964**	**0.1647**	**0.5611**	**0.1073**	**0.1572**	**0.2645**	**0.0000**	**685.0333**	**685.0333**	**0.0984**	**0.1082**	**719.7441**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9178	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0332	343.0332	0.0927	0.0000	345.3514
Total	**1.1386**	**6.2982**	**2.9178**	**0.0397**		**0.4951**	**0.4951**		**0.4951**	**0.4951**	**0.0000**	**343.0332**	**343.0332**	**0.0927**	**0.0000**	**345.3514**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2003

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
Total	**1.4444**	**5.1540**	**12.0426**	**0.0331**	**0.3964**	**0.1647**	**0.5611**	**0.1073**	**0.1572**	**0.2645**	**0.0000**	**685.0333**	**685.0333**	**0.0984**	**0.1082**	**719.7441**

3.4 Building Construction - 2004

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6020	3.3301	1.5428	0.0210		0.2618	0.2618		0.2618	0.2618	0.0000	181.3741	181.3741	0.0490	0.0000	182.5998
Total	**0.6020**	**3.3301**	**1.5428**	**0.0210**		**0.2618**	**0.2618**		**0.2618**	**0.2618**	**0.0000**	**181.3741**	**181.3741**	**0.0490**	**0.0000**	**182.5998**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2364	2.0284	1.2255	0.0145	0.0447	0.0796	0.1243	0.0129	0.0761	0.0891	0.0000	169.0241	169.0241	0.0113	0.0249	176.7357
Worker	0.5274	0.6967	5.1419	3.0500e-003	0.1649	7.4900e-003	0.1724	0.0438	6.9500e-003	0.0508	0.0000	193.1774	193.1774	0.0408	0.0323	203.8187
Total	**0.7637**	**2.7251**	**6.3674**	**0.0175**	**0.2096**	**0.0871**	**0.2967**	**0.0568**	**0.0831**	**0.1398**	**0.0000**	**362.2015**	**362.2015**	**0.0520**	**0.0572**	**380.5544**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6020	3.3301	1.5428	0.0210		0.2618	0.2618		0.2618	0.2618	0.0000	181.3739	181.3739	0.0490	0.0000	182.5996
Total	**0.6020**	**3.3301**	**1.5428**	**0.0210**		**0.2618**	**0.2618**		**0.2618**	**0.2618**	**0.0000**	**181.3739**	**181.3739**	**0.0490**	**0.0000**	**182.5996**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2364	2.0284	1.2255	0.0145	0.0447	0.0796	0.1243	0.0129	0.0761	0.0891	0.0000	169.0241	169.0241	0.0113	0.0249	176.7357
Worker	0.5274	0.6967	5.1419	3.0500e-003	0.1649	7.4900e-003	0.1724	0.0438	6.9500e-003	0.0508	0.0000	193.1774	193.1774	0.0408	0.0323	203.8187
Total	**0.7637**	**2.7251**	**6.3674**	**0.0175**	**0.2096**	**0.0871**	**0.2967**	**0.0568**	**0.0831**	**0.1398**	**0.0000**	**362.2015**	**362.2015**	**0.0520**	**0.0572**	**380.5544**

3.5 Paving - 2004

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4141	2.9626	1.2027	0.0167		0.1802	0.1802		0.1802	0.1802	0.0000	149.4170	149.4170	0.0337	0.0000	150.2602
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4141**	**2.9626**	**1.2027**	**0.0167**		**0.1802**	**0.1802**		**0.1802**	**0.1802**	**0.0000**	**149.4170**	**149.4170**	**0.0337**	**0.0000**	**150.2602**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0237	0.0313	0.2310	1.4000e-004	7.4100e-003	3.4000e-004	7.7400e-003	1.9700e-003	3.1000e-004	2.2800e-003	0.0000	8.6790	8.6790	1.8300e-003	1.4500e-003	9.1571
Total	**0.0237**	**0.0313**	**0.2310**	**1.4000e-004**	**7.4100e-003**	**3.4000e-004**	**7.7400e-003**	**1.9700e-003**	**3.1000e-004**	**2.2800e-003**	**0.0000**	**8.6790**	**8.6790**	**1.8300e-003**	**1.4500e-003**	**9.1571**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4141	2.9626	1.2027	0.0167		0.1802	0.1802		0.1802	0.1802	0.0000	149.4168	149.4168	0.0337	0.0000	150.2600
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4141**	**2.9626**	**1.2027**	**0.0167**		**0.1802**	**0.1802**		**0.1802**	**0.1802**	**0.0000**	**149.4168**	**149.4168**	**0.0337**	**0.0000**	**150.2600**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0237	0.0313	0.2310	1.4000e-004	7.4100e-003	3.4000e-004	7.7400e-003	1.9700e-003	3.1000e-004	2.2800e-003	0.0000	8.6790	8.6790	1.8300e-003	1.4500e-003	9.1571
Total	**0.0237**	**0.0313**	**0.2310**	**1.4000e-004**	**7.4100e-003**	**3.4000e-004**	**7.7400e-003**	**1.9700e-003**	**3.1000e-004**	**2.2800e-003**	**0.0000**	**8.6790**	**8.6790**	**1.8300e-003**	**1.4500e-003**	**9.1571**

3.5 Paving - 2005

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2778	2.0000	0.8638	0.0129		0.1266	0.1266		0.1266	0.1266	0.0000	115.6777	115.6777	0.0227	0.0000	116.2444
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2778**	**2.0000**	**0.8638**	**0.0129**		**0.1266**	**0.1266**		**0.1266**	**0.1266**	**0.0000**	**115.6777**	**115.6777**	**0.0227**	**0.0000**	**116.2444**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2005

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0126	0.0161	0.1286	7.0000e-005	5.7400e-003	1.5000e-004	5.8900e-003	1.5200e-003	1.4000e-004	1.6700e-003	0.0000	6.4016	6.4016	1.0100e-003	8.0000e-004	6.6657
Total	**0.0126**	**0.0161**	**0.1286**	**7.0000e-005**	**5.7400e-003**	**1.5000e-004**	**5.8900e-003**	**1.5200e-003**	**1.4000e-004**	**1.6700e-003**	**0.0000**	**6.4016**	**6.4016**	**1.0100e-003**	**8.0000e-004**	**6.6657**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2778	2.0000	0.8638	0.0129		0.1266	0.1266		0.1266	0.1266	0.0000	115.6775	115.6775	0.0227	0.0000	116.2442
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2778**	**2.0000**	**0.8638**	**0.0129**		**0.1266**	**0.1266**		**0.1266**	**0.1266**	**0.0000**	**115.6775**	**115.6775**	**0.0227**	**0.0000**	**116.2442**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2005

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0126	0.0161	0.1286	7.0000e-005	5.7400e-003	1.5000e-004	5.8900e-003	1.5200e-003	1.4000e-004	1.6700e-003	0.0000	6.4016	6.4016	1.0100e-003	8.0000e-004	6.6657
Total	**0.0126**	**0.0161**	**0.1286**	**7.0000e-005**	**5.7400e-003**	**1.5000e-004**	**5.8900e-003**	**1.5200e-003**	**1.4000e-004**	**1.6700e-003**	**0.0000**	**6.4016**	**6.4016**	**1.0100e-003**	**8.0000e-004**	**6.6657**

3.6 Architectural Coating - 2005

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.0023					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0617	0.3511	0.1704	2.4400e-003		0.0315	0.0315		0.0315	0.0315	0.0000	20.9367	20.9367	5.0500e-003	0.0000	21.0629
Total	**7.0640**	**0.3511**	**0.1704**	**2.4400e-003**		**0.0315**	**0.0315**		**0.0315**	**0.0315**	**0.0000**	**20.9367**	**20.9367**	**5.0500e-003**	**0.0000**	**21.0629**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2005

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0864	0.1102	0.8787	4.8000e-004	0.0392	1.0400e-003	0.0402	0.0104	9.6000e-004	0.0114	0.0000	43.7443	43.7443	6.9300e-003	5.4700e-003	45.5490
Total	**0.0864**	**0.1102**	**0.8787**	**4.8000e-004**	**0.0392**	**1.0400e-003**	**0.0402**	**0.0104**	**9.6000e-004**	**0.0114**	**0.0000**	**43.7443**	**43.7443**	**6.9300e-003**	**5.4700e-003**	**45.5490**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.0023					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0617	0.3511	0.1704	2.4400e-003		0.0315	0.0315		0.0315	0.0315	0.0000	20.9367	20.9367	5.0500e-003	0.0000	21.0628
Total	**7.0640**	**0.3511**	**0.1704**	**2.4400e-003**		**0.0315**	**0.0315**		**0.0315**	**0.0315**	**0.0000**	**20.9367**	**20.9367**	**5.0500e-003**	**0.0000**	**21.0628**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2005

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0864	0.1102	0.8787	4.8000e-004	0.0392	1.0400e-003	0.0402	0.0104	9.6000e-004	0.0114	0.0000	43.7443	43.7443	6.9300e-003	5.4700e-003	45.5490
Total	**0.0864**	**0.1102**	**0.8787**	**4.8000e-004**	**0.0392**	**1.0400e-003**	**0.0402**	**0.0104**	**9.6000e-004**	**0.0114**	**0.0000**	**43.7443**	**43.7443**	**6.9300e-003**	**5.4700e-003**	**45.5490**

3.6 Architectural Coating - 2006

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.3910					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0211	0.1199	0.0582	8.3000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	7.1491	7.1491	1.7200e-003	0.0000	7.1922
Total	**2.4121**	**0.1199**	**0.0582**	**8.3000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**	**0.0000**	**7.1491**	**7.1491**	**1.7200e-003**	**0.0000**	**7.1922**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2006

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0376	0.3000	1.6000e-004	0.0134	3.5000e-004	0.0137	3.5600e-003	3.3000e-004	3.8900e-003	0.0000	14.9371	14.9371	2.3700e-003	1.8700e-003	15.5533
Total	**0.0295**	**0.0376**	**0.3000**	**1.6000e-004**	**0.0134**	**3.5000e-004**	**0.0137**	**3.5600e-003**	**3.3000e-004**	**3.8900e-003**	**0.0000**	**14.9371**	**14.9371**	**2.3700e-003**	**1.8700e-003**	**15.5533**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.3910					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0211	0.1199	0.0582	8.3000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	7.1491	7.1491	1.7200e-003	0.0000	7.1922
Total	**2.4121**	**0.1199**	**0.0582**	**8.3000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**	**0.0000**	**7.1491**	**7.1491**	**1.7200e-003**	**0.0000**	**7.1922**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2006

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0376	0.3000	1.6000e-004	0.0134	3.5000e-004	0.0137	3.5600e-003	3.3000e-004	3.8900e-003	0.0000	14.9371	14.9371	2.3700e-003	1.8700e-003	15.5533
Total	**0.0295**	**0.0376**	**0.3000**	**1.6000e-004**	**0.0134**	**3.5000e-004**	**0.0137**	**3.5600e-003**	**3.3000e-004**	**3.8900e-003**	**0.0000**	**14.9371**	**14.9371**	**2.3700e-003**	**1.8700e-003**	**15.5533**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229
Unmitigated	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	4.27	10.72	11.98	13,429	13,429
Single Family Housing	5,248.64	5,304.24	4753.80	14,617,649	14,617,649
Total	5,252.91	5,314.96	4,765.78	14,631,078	14,631,078

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.445143	0.090887	0.165130	0.187970	0.045320	0.007055	0.014780	0.012618	0.000711	0.000220	0.019746	0.001150	0.009270
Single Family Housing	0.445143	0.090887	0.165130	0.187970	0.045320	0.007055	0.014780	0.012618	0.000711	0.000220	0.019746	0.001150	0.009270

5.0 Energy Detail

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
NaturalGas Mitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
NaturalGas Unmitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
Total		**0.0721**	**0.6158**	**0.2621**	**3.9300e-003**		**0.0498**	**0.0498**		**0.0498**	**0.0498**	**0.0000**	**713.2008**	**713.2008**	**0.0137**	**0.0131**	**717.4390**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
Total		**0.0721**	**0.6158**	**0.2621**	**3.9300e-003**		**0.0498**	**0.0498**		**0.0498**	**0.0498**	**0.0000**	**713.2008**	**713.2008**	**0.0137**	**0.0131**	**717.4390**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		**786.2653**	**0.0664**	**8.0400e-003**	**790.3215**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		**786.2653**	**0.0664**	**8.0400e-003**	**790.3215**

6.0 Area Detail

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965
Unmitigated	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.5656					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	100.6017	1.7040	131.6858	0.2492		18.6574	18.6574		18.6574	18.6574	1,833.3665	240.8633	2,074.2298	2.4053	0.1209	2,170.3828
Landscaping	0.2072	0.0651	4.7880	2.2000e-004		0.0202	0.0202		0.0202	0.0202	0.0000	6.7437	6.7437	0.0108	0.0000	7.0137
Total	**106.2853**	**1.7691**	**136.4738**	**0.2494**		**18.6776**	**18.6776**		**18.6776**	**18.6776**	**1,833.3665**	**247.6070**	**2,080.9735**	**2.4161**	**0.1209**	**2,177.3965**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.5656					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	100.6017	1.7040	131.6858	0.2492		18.6574	18.6574		18.6574	18.6574	1,833.3665	240.8633	2,074.2298	2.4053	0.1209	2,170.3828
Landscaping	0.2072	0.0651	4.7880	2.2000e-004		0.0202	0.0202		0.0202	0.0202	0.0000	6.7437	6.7437	0.0108	0.0000	7.0137
Total	**106.2853**	**1.7691**	**136.4738**	**0.2494**		**18.6776**	**18.6776**		**18.6776**	**18.6776**	**1,833.3665**	**247.6070**	**2,080.9735**	**2.4161**	**0.1209**	**2,177.3965**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	64.4766	1.1849	0.0284	102.5661
Unmitigated	64.4766	1.1849	0.0284	102.5661

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.5174	4.0454	3.4000e-004	4.0000e-005	4.0663
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
Total		**64.4766**	**1.1849**	**0.0284**	**102.5661**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.5174	4.0454	3.4000e-004	4.0000e-005	4.0663
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
Total		**64.4766**	**1.1849**	**0.0284**	**102.5661**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	141.0605	8.3364	0.0000	349.4713
Unmitigated	141.0605	8.3364	0.0000	349.4713

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.47	0.0954	5.6400e-003	0.0000	0.2364
Single Family Housing	694.44	140.9650	8.3308	0.0000	349.2349
Total		**141.0605**	**8.3364**	**0.0000**	**349.4713**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.47	0.0954	5.6400e-003	0.0000	0.2364
Single Family Housing	694.44	140.9650	8.3308	0.0000	349.2349
Total		**141.0605**	**8.3364**	**0.0000**	**349.4713**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B

Biological Resources Assessment

Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
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Biological Resources Assessment

Lagomarsino Housing Subdivision Project
Assessor Parcel Numbers 172-080-002, 172-010-021, 172-010-022 and 184-020-010
Tulare, CA



Prepared for

4CREEKS
324 South Santa Fe Street, Suite A
Visalia, CA 93292

Prepared by

SOAR ENVIRONMENTAL CONSULTING
1322 E Shaw, Suite 400
Fresno, CA 93710

January 31, 2024

Executive Summary

4Creeks, Inc. (4Creeks) has tasked Soar Environmental Consulting Inc. (Soar Environmental) to provide a Biological Resource Assessment (BRA) as part of an Initial Study, for a 525-unit Housing Subdivision Development Project (Project) in the City of Tulare (City) in accordance with the California Environmental Quality Act (CEQA) prior to implementation of the proposed Project. The proposed Project is to construct single-family homes on 140.32 acres of land on Assessor Parcel Numbers (APN) 172-080-002, 172-010-021, 172-010-022 and 184-020-010. These parcels are comprised of fallow agricultural fields on the outskirts of the city.

The objectives of this assessment are to: 1) provide a general characterization of biological resources on the property; 2) inventory plant and wildlife species; 3) evaluate the potential for special-status plant and animal species to occur or be impacted by project activities; and 4) describe the property's sensitive biological resources.

This BRA provides information concerning the biological resources within the Project Area. Prior to conducting a Habitat Assessment site survey, Soar Environmental researched the California Natural Diversity Database (CNDDB) and the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California, to compile a list of special-status species that could potentially be present in the vicinity of the Project Area. Suitable habitat requirements for the species identified in the records search were reviewed by a Soar Environmental biologist, including species listing status, and proximal observations of special-status plant and wildlife species identified in this report.

No special-status plant or wildlife species were observed in the Project Area during the Habitat Assessment survey conducted on December 12, 2023. However, based on suitable habitat present, and proximity of documented occurrences of special-status species from the data records search and Literature Review section of this report, it was determined that there is potential for burrowing owl (*Athene cunicularia*), San Joaquin kit fox (*Vulpes macrotis mutica*), Swainson's hawk (*Buteo swainsoni*), western mastiff bat (*Eumops perotis*), and western pond turtle (*Actinemys marmorata*) to occur within the vicinity of the Project Area. Based on the findings of this assessment, the proposed development of this property may affect but is unlikely to adversely affect burrowing owl, San Joaquin kit fox, Swainson's hawk, western mastiff bat, or western pond turtle, and will not affect any other listed species identified in this report. Mitigation measures are listed in Section 6 of this report to further minimize the potential for adverse effects to listed species, and their habitats.

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1. Introduction

The proposed Project is the construction of a 525-unit housing development on 140.32 acres within the City of Tulare, California. Soar Environmental Consulting Inc. (Soar Environmental) is tasked with providing this Biological Resource Assessment (BRA) in accordance with CEQA requirements.

This Biological Resource Assessment presents the findings of our literature review (including scientific literature and previous reports detailing studies conducted in the area) and the California Department of Fish and Wildlife's (CDFW) Natural Diversity Data Base (CNDDB), the California Native Plant Society (CNPS) online electronic inventory of rare and endangered plants of California, and the U.S. Fish and Wildlife Service (USFWS) IPaC for reported occurrences of special status vegetation communities, plants and animals. Based on a review of these resources it was determined that a Biological Assessment was necessary to search for the potential suitable habitat or presence for the following special-status species:

Special-Status Wildlife Species

- Burrowing Owl (*Athene cunicularia*)
- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's hawk (*Buteo swainsoni*)
- Western Mastiff Bat (*Eumops perotis californicus*)
- Western Pond Turtle (*Actinemys marmorata*)

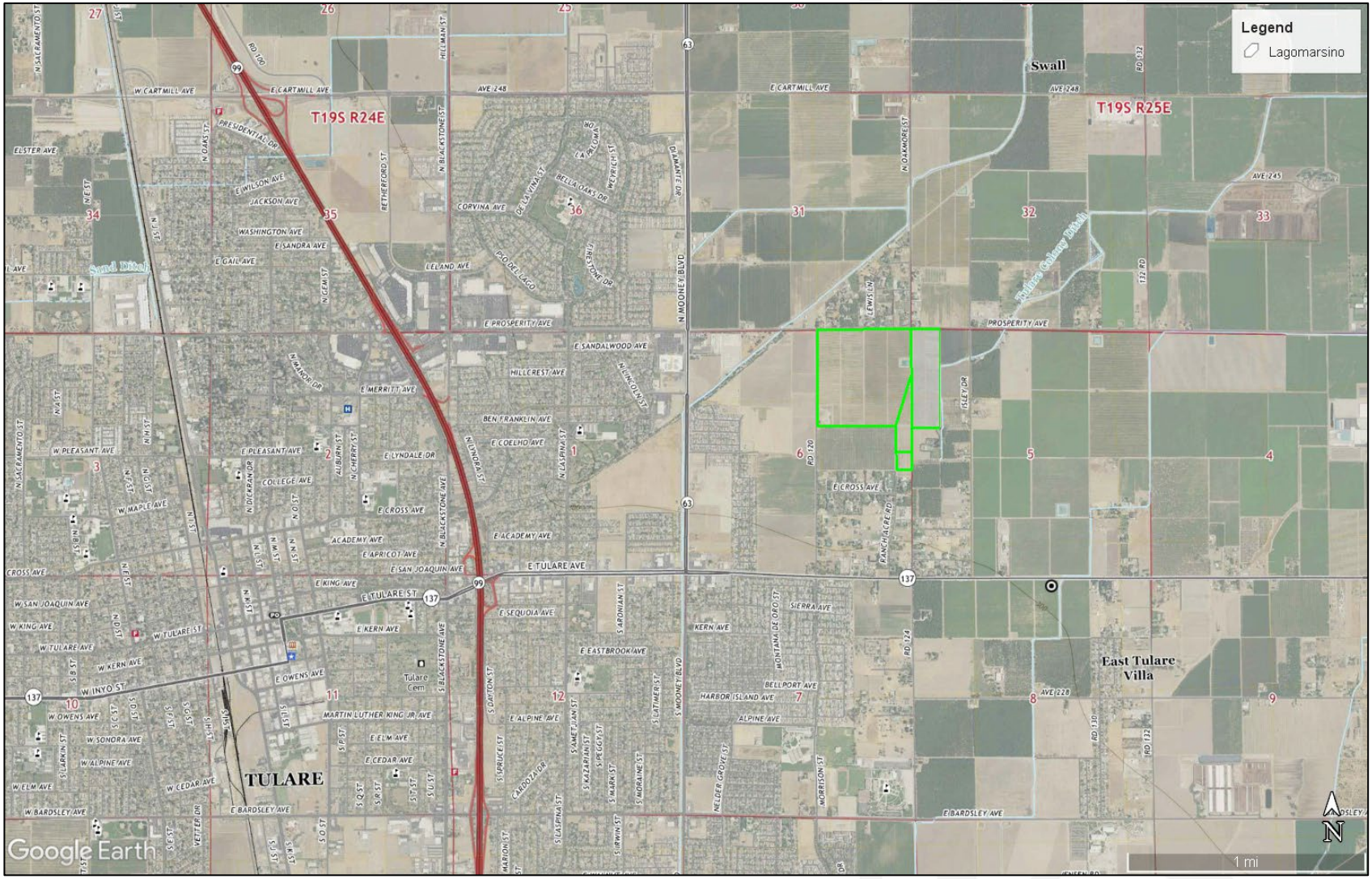
A Habitat Assessment was conducted in the Project Area on December 12, 2023, by a Soar Environmental qualified biologist. The purpose of the Biological Assessment survey was to search for the suitable habitat conditions, or presence of special-status species that have historically been observed within, or surrounding, the Project Area, as well as any other biological or environmentally sensitive resources. The Project Area consists of 74-acres of fallow millet-rice fields, 60-acres of potted blueberries, 0.5-acre pump station stockpond with southern cattail, 3-acres farm equipment storage area, and 2.82-acres of unpaved dirt roads throughout the Project Area. No special-status species were observed during the site visit, and no alkali grassland or shrubland occur in the Project Area.

1.1 Project Location

The Project Area is located on the corner of Morrison Street and Prosperity Avenue in the City of Tulare, California, Tulare County and is comprised of Assessor Parcel Numbers (APN) 172-080-002m 172-010-021, 172-010-022 and 184-020-010. The Project Area is in the east end of the city limits, approximately 2 miles east of SR-99, 0.5 mile east of SR-65 and 0.45 mile north of SR-137. A man-excavated canal, the Tulare Colony Ditch, runs across east to west through the Project Area on the north side of the property near Prosperity Avenue.

The Project Area is located in the two USGS 7.5-minute quadrangle of in Township 19 South, Range 25 East, in the northeast quarter of Section 6 and in the northwest quarter of Section 5. Row crops surround the Project Area to the northeast and west, fallow fields to the immediate east but commercial and urban residential 0.5 miles east, urban residential to the north, and a mix of rural residential and orchards to the south. The Tulare Colony Ditch connects with Deep Creek 171 feet west, Outside Creek is 5.2 miles east, and Tulare Lake is 30 miles southwest to the Project Area. The irrigation system located on the north boundary of the Project Area has hydrologic connectivity to Tulare Lake, a seasonal lake and playa. A new subdivision including several city streets is being developed on the cleared properties to the east. The Project Area is fairly level and ranges from 295 to 302 feet elevation above mean sea level. The properties have functioned as active farming and irrigated row crops and include a vegetated pump station irrigation pond and an underground irrigation drainage ditch along the northern boundary.

Figure 1. Project Location



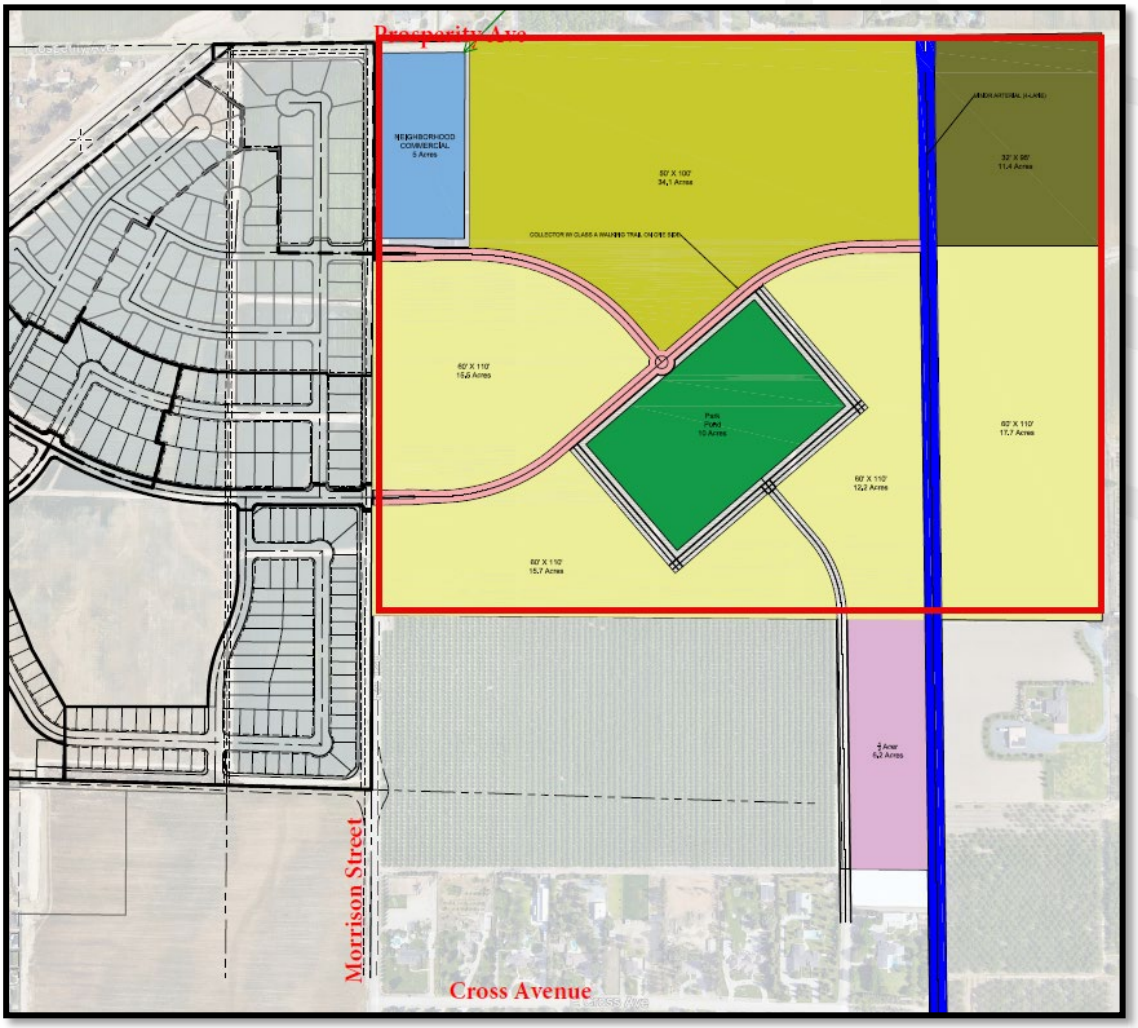
Project Area (green) is located on the corner of Morrison Street and Prosperity Avenue in the City of Tulare in Tulare County, Assessor Parcel Numbers 172-080-002 (bottom), 172-010-021 (left), 172-010-022 (center), and 184-020-010 (right).

1.2 Project Description

The proposed Project is the construction of a 525-unit housing subdivision at the southeast corner of Morrison Street and Prosperity Avenue, in the City of Tulare. The Project Area is limited to a 140.32-acre property currently used for irrigated row crop.

The project will require the development of roads and sidewalks around and throughout the property. A park/pond will be developed on 10 acres in the middle of the Project Area. An additional five acres in the northeast corner of the Project Area will be developed into a neighborhood commercial area according to VMT mitigation. Since the entire property will be graded for the housing project during construction activities, the above ground water basin in the northwest quarter of the property would be removed. The majority of the property has been used for agricultural production and the entire lot has been cleared and maintained. (**Diagram A– Site Plan**)

Diagram A. Site Plan



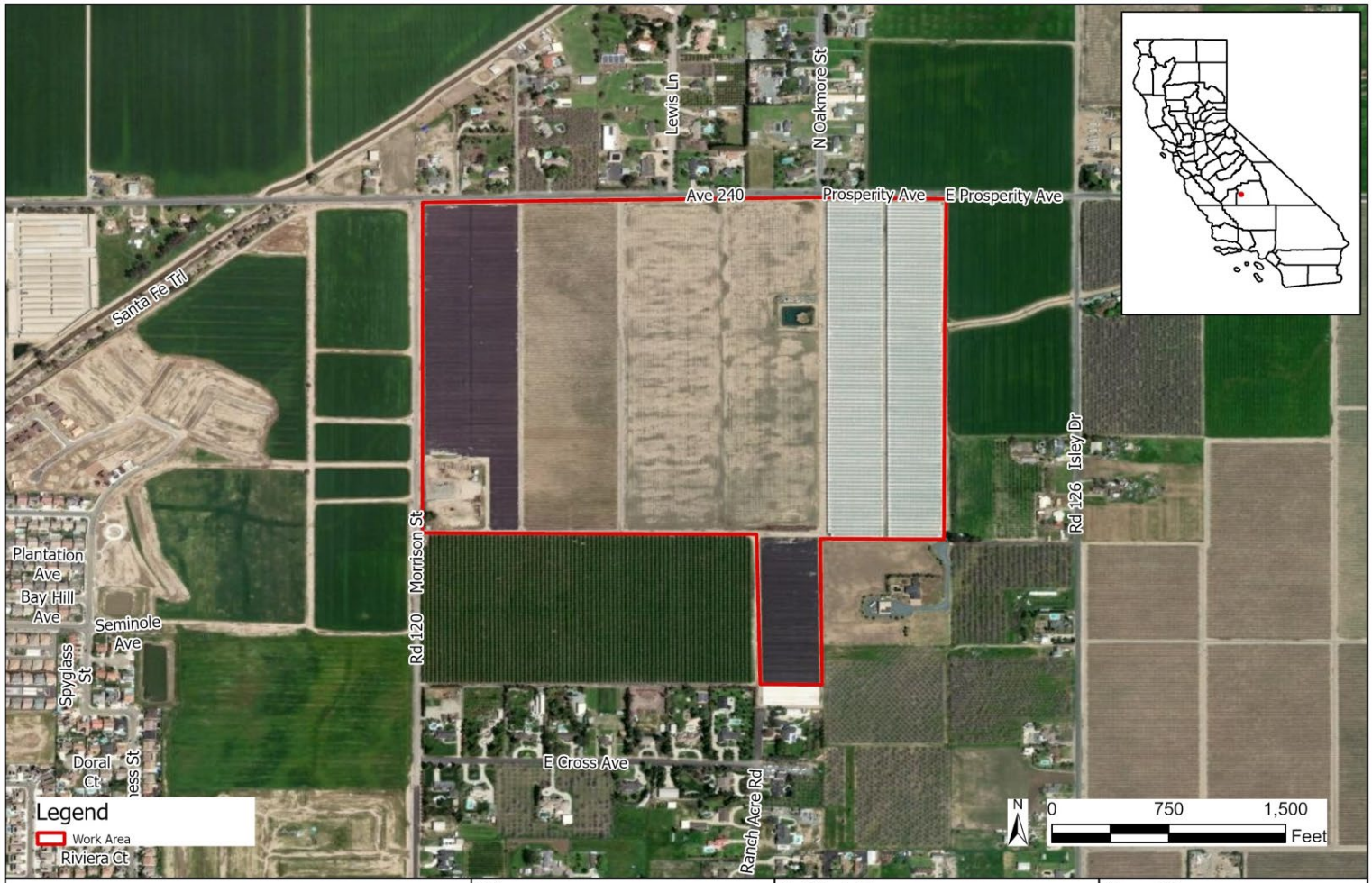
A detailed development plan is shown in Appendix F.

1.3 Environmental Setting

The Project Area is surrounded by urban residential properties to the west, north and south, a fallow field planned for further development of rural residential to the west, orchards and row crops to the south and east (**Figure 2**). This area is on the southeastern side of Visalia in the Central Valley near the Sierra Nevada foothills. The property was used for irrigated row crops until recently. Currently the Project Area is primarily bare ground after irrigated row crop removal, with limited disturbance tolerant annual grasses and herbaceous weed in patches, and few remnant landscaped shrubs. The remainder of the property to the west, east and south contains potted blueberries. The ground is covered with a tarp to prevent other plants from occupying the area.

The Project Area is a 140.32-acre disturbed vacant field, composed primarily of bare ground and non-native annual herbs and grasses. A buried underground ditch, the Tulare Colony Ditch, occurs along the north boundary. The topography is relatively flat, ranging from 295 feet above sea level to the south, sloping up to 302 feet above sea level to the north. According to the USDA NRCS Soil Survey (**Appendix E**) the Project Area is composed from two soil types 124 Hanford sandy loam, 0 to 2 percent slopes, and most of the property is mapped as 130 Nord fine sandy loam, 0 to 2 percent slopes.

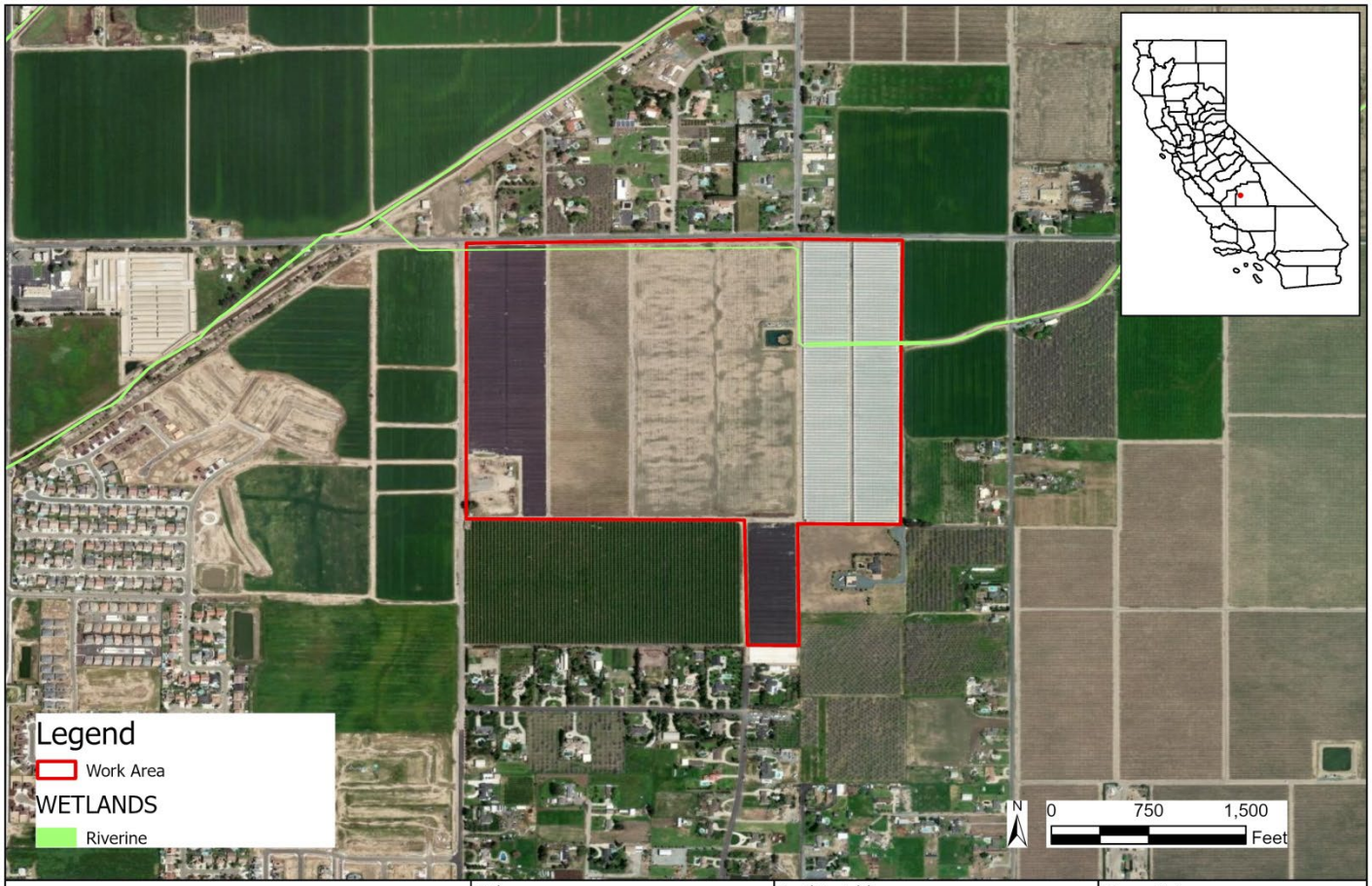
Figure 2. Project Area Boundary



1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884	Title Four Creeks Lagomarsino Tulare CA Client 4Creeks	Facility Address Subdivision bounded by Morrison and Prosperity in the City of Tulare.	Figure # 2 Project Vicinity Revision Date 12/11/2023

Project Area: 140.32 acres of fallow agricultural fields, formerly used as irrigated row crops.

Figure 3. USFWS National Wetlands Inventory (NWI) Map



1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884	Title Four Creeks Lagomarsino Tulare CA	Facility Address Subdivision bounded by Morrison and Prosperity in the City of Tulare.	Figure # 4 USFWS NWI Map
	Client 4Creeks		Revision Date 12/11/2023

2. Methods

2.1 Literature Review

Prior to performing the Biological Assessment, Soar Environmental conducted soil survey analysis (**Appendix E**) a survey of the USFWS National Wetlands Inventory (**Figure 4**) and a CNDDB records search (**Appendix C**) for threatened or endangered species that could potentially occur in the vicinity of the Project Area. The records search included a review of the California Natural Diversity Database (CNDDB), the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society (CNPS) Online Rare Plant Inventory. The area covered by the data records search included the USGS 7.5-minute quadrangles of *Cairns Corner, Visalia, Tulare, Exeter, Tipton, Woodville, Paige, Goshen* and *Taylor Weir*. From these sources a list of special-status plant and animal species was generated. Proximal locations of known special-status plant and animal species found within 5 miles of the Project Area are shown in **Figure 5**.

A records search of the CNDDB and IPaC databases showed 12 special-status wildlife species most likely to occur within or near the Project Area would include:

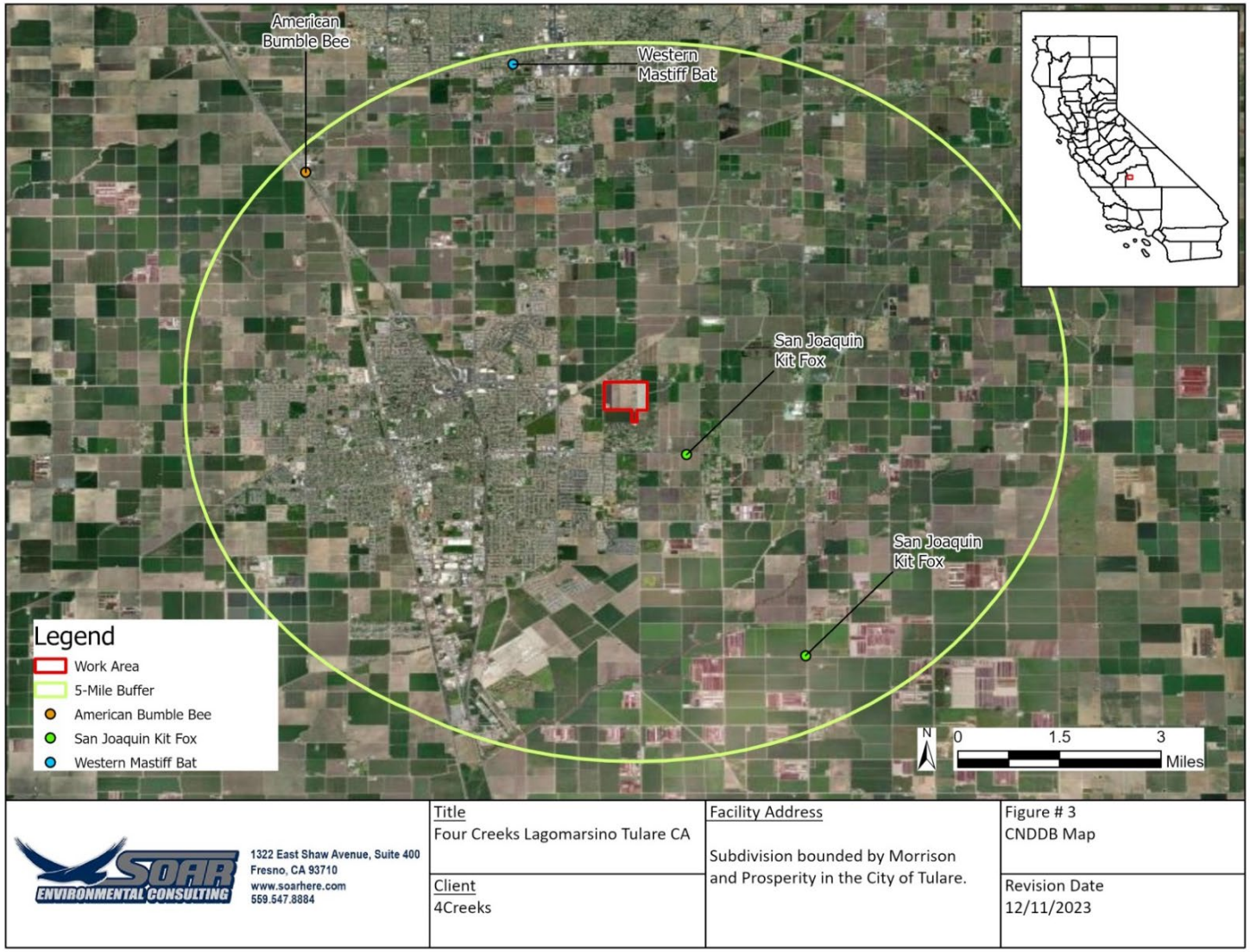
- American Bumble Bee (*Bombus pensylvanicus*)
- Blunt-nosed Leopard Lizard (*Gambelia silus*)
- Buena Vista Lake Ornate Shrew (*Sorex ornatus relictus*)
- California Tiger Salamander (*Ambystoma californiense*)
- Monarch Butterfly (*Danaus plexippus*)
- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's Hawk (*Buteo swainsoni*)
- Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)
- Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)
- Western Mastiff Bat (*Eumops perotis californicus*)
- Western Pond Turtle (*Actinemys marmorata*)
- Western Spadefoot Toad (*Spea hammondii*)

A search of the CNPS Online Rare Plant Inventory named 13 regionally occurring special-status plant species with potential to occur within or near the Project Area. Of these, all 13 plant species were determined to have no potential to occur within the Project Area because the area has been active agricultural land for decades and so it lacks a native seed bank. These special-status plants were determined to have no potential to occur in the Project Area and were excluded from further analysis.

- Alkali-sink Goldfields (*Lasthenia chrysantha*)
- Brittlescale (*Atriplex depressa*)
- California Alkali Grass (*Puccinellia simplex*)
- California Jewelflower (*Caulanthus californicus*)
- California Satintail (*Imperata brevifolia*)
- Earlimart Orache (*Atriplex cordulata* var. *erecticaulis*)

- Ewan's Larkspur (*Delphinium hansen*ii ssp. *ewanianum*)
- Heartscale (*Atriplex cordulata* var. cordulata)
- Lesser Saltscale (*Atriplex miniscula*)
- Recurved Larkspur (*Delphinium recurvatum*)
- San Joaquin Adobe Sunburst (*Pseudobahia peirsonii*)
- Spiny-sepaled Button-celery (*Eryngium spinosepalum*)
- Subtle Orache (*Atriplex subtilis*)

Figure 4. CNDDB Special-Status Species Locations



This map shows the closest and most recent special-status species locations from the California Natural Diversity Database (CNDDB), and California Native Plant Society (CNPS) Online Rare Plant Inventory.

2.2 Field Reconnaissance Methodology

The Habitat Assessment is a diurnal, non-protocol survey. The purpose of the Habitat Assessment Survey was to search for the presence of special-status species or suitable habitat for special-status species identified in the data records search. The site visit for the Habitat Assessment includes observation and noting the plant and wildlife species occurring on and around the Project Area, habitat suitability for the species named in the **Literature Review**, present environmental conditions, and habitat, including microhabitat (only observable from the ground level).

The Habitat Assessment was conducted on December 12, 2023, by Soar Biologist to assess habitat quality for species listed in Section 2.1. Survey efforts emphasized the search for suitable habitats, or presence of special-status species that had documented occurrences in the data records search of the CNDDB, IPaC, and CNPS databases. The site visit consists of walking the perimeter of the property and meandering transects throughout the Project Area. During the site visit, the surveyor identified vegetation, searched for bird nests, possible small mammal dens, vernal pools and other signs of wildlife occupancy or associated suitable habitats. Plants were surveyed during the late blooming period or surveyed outside the blooming period. The biologist also surveyed the surrounding area by vehicle in accessible areas within 0.5 miles of the Project Area to look for biological resources and features that may be conducive for suitable habitat of the identified special-status species. During the survey, the biologist collected photos of the Project boundaries and other points of interest depicting the habitat and potential biological resources (**Appendix A**).

3. Biological Assessment Results

During the site visit, there were no observations of special-status plant or wildlife species. Plant and wildlife species that were observed on the property are listed in **Tables 1 & 2**. All 140.32 acres of the Project Area is a bare dirt fallow agricultural field dominated in places by non-native annual grasses or ruderal weeds and potted blueberries with farm laborers present on site and cultivating the fields during the Habitat Assessment. Three bird boxes were observed on power pole lines; two were outside the Project Area and one was found in the middle of the Project Area near the irrigation pump station. A single European starling was observed using the bird box on the adjacent property. Several small mammal burrows were observed within the fallow field where millet-rice was harvested and along the unpaved dirt roads throughout the property. Most of the small mammal burrows were located on the south boundary of the Project Area on the unpaved roads next to an orchard and single-family residential buildings. A strand of native but cultivated trees from the adjacent properties (consisting of coastal redwood, garden rose, valley oak, common fig, glossy privet, and Chinese pistache) has overhanging branches and leaves in the Project Area. The root and trunk systems of the native but cultivated trees are located outside the Project Area in the adjacent properties. The ground is relatively flat and cleared to the surface

The survey was conducted by a qualified biologist outside of the blooming period for most of the sensitive plant species listed in the Literature Review. However, no special-status plant species were seen within or in the vicinity of the Project Area, and conditions for these species do not appear to be conducive, due to active agriculture uses and the loss of a native seed bank from regular agricultural activity over decades of time (since before the 1980's per Google Earth historic photos).

No special-status plant or wildlife species were observed during the site visit. However, the Soar Biologist saw some common bird species flying around the area, listed in **Table 1** below, along with plant species seen onsite. No other wildlife species were observed during the Biological Assessment.

The Tulare Colony Ditch is shown aerially through Google Earth and is mapped in the National Wetland Inventory. This ditch is shown along the north boundary of the Project Area, but during the Habitat Assessment, no visible sign of the Tulare Colony Ditch was seen. The only evidence of the Tulare Colony Ditch in the Project Area is in the middle of the Project Area where a mud-lined agricultural irrigation pump pond occurs. The pond held water and half of the pond was covered in southern cattail. The area was enclosed in a fence and was locked during the Habitat Assessment.

The status of the three bird boxes is unknown but only one bird box on the adjacent property, outside the Project Area, appeared to be occupied by a single European starling. None of the small mammal burrows had any signs of burrowing owl occupancy such as whitewash or feathers at the mouth of the burrows. However, there was whitewash seen throughout the Project Area including the fallow field. There were areas along the fence line with signs of wildlife crossing where dirt was removed underneath the barbwire fence for a mid-sized animal estimated between 10 and 27 inches tall.

Table 1. Wildlife Species Observed on the Project Area

Wildlife Species	Listing Status
Northern flicker (*Colaptes auratus*)	MBTA
Anna's hummingbird (*Calypte anna*)	MBTA
American crow (*Corvus brachyrhynchos*)	MBTA
House finch (*Haemorhous mexicanus*)	MBTA
California scrub-jay (*Aphelocoma californica*)	MBTA
American robin (*Turdus migratorius*)	MBTA
Ruby-crowned kinglet (*Corthylio calendula*)	MBTA
American goldfinch (*Spinus tristis*)	MBTA
Mourning dove (*Zenaida macroura*)	MBTA

Wildlife Species	Listing Status
European starling (*Sturnis vulgaris*)	None
Black phoebe (*Sayornis nigricans*)	MBTA
Yellow-rumped warbler (*Setophaga coronata*)	MBTA
Savannah sparrow (*Passerculus sandwichensis*)	MBTA
Canadian geese (*Branta canadensis*)	MBTA
Horned lark (*Eremophila alpestris*)	MBTA
Domestic dog (*Canis lupus familiaris*)	None
Killdeer (*Charadrius vociferus*)	MBTA

Table 2. Plant Species Observed on the Project Area

Plant Species	Listing Status
English black walnut (*Juglans nigra*)	Non-Native
Crab grass (*Digitaria* sp.)	Non-Native
Millet-rice (*Echinochloa colona*)	Non-Native, Cultivated
Marestail (*Erigeron canadensis*)	Non-Native
Tumbleweed (*Amaranthus albus*)	Non-Native
Small nettle (*Urtica urens*)	Non-Native
Goathead (*Tribulus terrestris*)	Non-Native
Prickly lettuce (*Lactuca serriola*)	Non-Native
Cheeseweed (*Malva parviflora*)	Non-Native
Curly dock (*Rumex crispus*)	Non-Native
Common grundsel (*Senecio vulgaris*)	Non-Native
Southern cattail (*Typha domingensis*)	Native
Black nightshade (*Solanum nigrum*)	Non-Native
Spiny sowthistle (*Sonchus asper*)	Non-Native

Plant Species	Listing Status
Velvet grass (*Lactuca serriola*)	Non-Native
Pepperweed (*Cardamine hirsuta*)	Non-Native
Birdeye pearlwort (*Sagina procumbens*)	Non-Native
Broadleaf cudweed (*Gamochaeta pensylvanica*)	Non-Native
Silver moss (*Bryum argenteum*)	Non-Native
Highbush blueberries (*Vaccinium corymbosum*)	Non-Native, Cultivated
Nettle-leaved goosefoot (*Chenopodiastrum murale*)	Non-Native
Coyote melon (*Cucurbita palmata*)	Native
Mat amaranth (*Amaranthus blitoides*)	Non-Native
Glossy privent (*Ligustrum lucidum*)	Non-Native
Chinese pistache (*Pistacia chinensis*)	Non-Native
Coast redwood (*Sequoia sempervirens*)	Native, Cultivated
Western redbud (*Cercis occidentalis*)	Native
Garden rose (*Rosa chinensis*)	Non-Native, Cultivated
Common Fig (*Ficus carica*)	Non-Native, Cultivated
Valley oak (*Quercus lobata*)	Native, Cultivated

4. Special-Status Species

Special-status plants and animals that have a reasonable possibility to occur in the Project Area based on habitat suitability and requirements, elevation and geographic range, soils, topography, surrounding land uses, and/or proximity of known occurrences in the CNDDB, IPaC, and CNPS databases to the Project Area are listed in **Tables 3 & 4**. The likelihood for occurrence of special-status species was assessed using information from the various sources listed in **Section 2.1**, as well as the Habitat

Assessment field survey. Narratives are supplied for species for which there are land use planning and regulatory implications.

Results from the data records search found 25 special-status species: 12 wildlife and 13 plant species. However, an analysis of recent occurrences, habitat suitability and proximity within 5-miles to the Project Area showed one special-status wildlife species with high potential to occur and four special-status wildlife species with low potential for occurrence. Special-status species for which there are no regulatory implications (i.e., lack of suitable habitat or no record of historical occurrences within 5 miles) are excluded from further analysis.

Species with High Potential for Occurrence:

- Burrowing Owl (*Athene cunicularia*)

Species with Low Potential for Occurrence:

- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's Hawk (*Buteo swainsonii*)
- Western Mastiff Bat (*Eumops perotis*)
- Western Pond Turtle (*Actinemys marmorata*)

Special-status species and sensitive habitats include plant and wildlife taxa, or other unique biological features afforded special protection by local land use policies, and/or state and federal regulations. Special-status plant and animal species are those listed as rare, threatened, or endangered under the state or federal Endangered Species Acts or those who are rare enough to become listed in the foreseeable future (Cal. Code Regs. Tit. 14 § 15380). Vegetation communities may call for special status if they are of limited distribution, have high wildlife value, or are particularly vulnerable to disturbance. Listed and special-status species are defined as:

- Listed or proposed for listing under the state or Federal Endangered Species acts.
- Protected under other regulations (e.g., Migratory Bird Treaty Act).
- California Department of Fish & Wildlife (CDFW) Species of Special Concern.
- Listed as species of concern by CNPS or USFWS; and/or
- Receive consideration during environmental review under CEQA.

All species from the Section 2.1 search results are listed below including common and non-listed species. The analysis and following determination are based on Habitat Assessment results and the most recent occurrence and proximity to the Project Area per Section 2.1 (Table 1, Table 2).

- **Present:** Species known to occur on the site, based on CNDDB records, and/or was observed on the site during the field survey.

- **High:** Species known to occur on or near the site (based on CNDDB record within 5 miles), and/or there is suitable habitat on the site.

- **Low:** Species known to occur on or near the site (based on CNDDB record within 5 miles), but there is no suitable habitat onsite.

- **None:** Species is not known to occur on within 5 miles of the site and there is no suitable habitat on the site. -OR- Species was surveyed for during the appropriate season with negative results.

Table 3. Regionally Occurring Special-Status Wildlife Species

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
Amphibians			
California Tiger Salamander (*Ambystoma californiense*)	FT/ST/-	Grasslands, oak savannah riparian woodlands and lower elevations of coniferous forests, ditches, vernal pools, and wetlands.	**None.** Dependent on the presence of vernal pool habitat. Active agricultural land has no potential for the species.
Western Spadefoot Toad (*Spea hammondii*)	FC/-/SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**None.** Dependent on the presence of vernal pool habitat. Additionally, lacks food source due to heavy commercial use of pesticide for agriculture.
Birds			
Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)	-/SE/BCC/MBTA	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	**None**. No salt marsh or pickleweed nesting habitat occur in the Project Area. No tidal flats.
Bullock's Oriole (*Icterus bullockii*)	-/-/BCC/MBTA	Found in open broadleaf woods, foraging among leaves in trees.	**None**. Species is not known to occur on within 5 miles of the site and there is no suitable habitat on the site.
Burrowing Owl (*Athene cunicularia*)	-/-/ SSC/BCC/MBTA	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**High**. Small mammal burrows between 2 and 3 inches in diameter were found in abundance providing suitable habitat for this species, and a was observed during the KCOK Habitat Assessment in March 2022 (see **Appendices G & H**).

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
California Gull (*Larus californicus*)	-/-/CWL/BCC/MBTA	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mudflats, marshes, lakes, etc. Colonial nesters on islets in large interior lakes, either fresh or strongly alkaline.	**None.** No habitat occurs for this aquatic bird species.
Marbled Godwit (*Limosa fedoa*)	-/-/BCC/MBTA	Shortgrass prairies near wetlands.	**None.** The Project Area lacks suitable wetland habitat for this species. The Project Area lacks shortgrass prairies near wetlands.
Nuttall's Woodpecker (*Picoides nuttallii*)	-/-/BCC/MBTA	Wooded canyons and foothills, river woods. In much of range almost always around oaks, especially where oaks meet other trees along rivers, also in pine-oak woods in foothills.	**None.** No habitat occurs for this woodland bird species.
Oak Titmouse (*Baeolophus inornatus*)	-/-/BCC/MBTA	Woodland dominated by oaks, riparian habitats and coast live oak trees within, nests in tree cavities	**None.** No habitat occurs for this oak woodland bird species.
Swainson's Hawk (*Buteo swainsoni*)	-/ST/SSC BCC/MBTA	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Low**: Species known from a single occurrence over 5 miles from site to the west. Suitable habitat includes bird boxes situated on top of electrical poles and open foraging areas in the fallow fields of row crops.
Invertebrates			
American Bumble Bee (*Bombus pensylvanicus*)	-/-/-	Prefers habitats offered by farmlands and open fields where they nest below the grass or underground.	**None:** The Project Area lacks the native wildflower field nectar habitat needed to support this species.

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
Monarch Butterfly (*Danaus plexippus*)	FC/-/-	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**None:** No roosting, foraging (nectar-flowers) or reproductive host plant habitat (Milkweed, *Asclepias* sp.) is present in the Project Area.
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT/-/-	Endemic to the vernal pools in grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**None:** No seasonal aquatic habitat for this species, such as vernal pools, occurs in the Project Area.
Mammals			
Buena Vista Lake Ornate Shrew (*Sorex ornatus relictus*)	FE/SSC/-	Found near water sources in protective groundcover like deep leaf litter, cattails and fallen logs. Found in grassland and desert scrub within a few hundred feet of water sources, or where water is close to the surface and their prey can be found. Also found in lake with a considerable inland body of standing water, rural environments influenced by humans such as agriculture, silvaculture, or aquaculture, wetland areas such as marshes or swamps covered often intermittently or saturated soils, springs or seeps.	**None.** The irrigation pump pond is an open and exposed area. The Project Area lacks a groundcover and is maintained regularly. Regular use of commercial grade pesticide for agriculture may also reduce prey such as snails and worms.

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FE/ST/-	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**Low**: Site has dispersal, foraging and denning habitat and a previous record occurring within 5 miles surrounding the Project Area.
Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)	FE/SE/-	Saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.	**None:** No alkali scrub or sink scrub habitat occurs in the Project Area. No seed forage habitat occurs in the Project Area. The Project Area is an active agricultural field.
Western Mastiff Bat (*Eumops perotis californicus*)	-/-/SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Low:** Limited day/feeding roosting to bird boxes. Open fallow fields provide foraging habitat for this species in the Project Area. Species is known from one bat record 5 miles north of Project Area.
Reptiles			
Blunt-nosed Leopard Lizard (*Gambelia sila*)	FE/SE/FP	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.	**None:** No alkali scrub or desert scrub habitat occurs in the Project Area. The Project Area is an active agricultural field.
Western Pond Turtle (*Actinemys marmorata*)	FPT/-/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet of elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Low:** High quality potential habitat in the form of an open water vegetated irrigation pump pond in the middle of the Project Area. Pond is lined with dirt and surrounded by fallow field of row crops providing basking habitat. No CNDDB occurrence recorded.

*Listing Status Notes:

Federal:
FE – Federally listed Endangered
FT – Federally listed Threatened
FC – Federal Candidate Species
FPT – Federal Proposed Threatened
FWL – USFWS Watch list
BCC – USFWS Bird of Conservation Concern
MTBA – Migratory Bird Treaty Act

State:
SE – State listed Endangered
ST – State listed Threatened
SC – State Candidate Species
SR – State Rare Species
SA – State Special Animal
FP – CDFW Fully Protected Species
SSC – CDFW Species of Special Concern
CWL – CDFW Watch List

Table 4. Regionally Occurring Special-Status Plant Species

Common/ Scientific Name	*Status Fed/CA/CNPS/ Bloom Period	Habitat Description	Potential for Occurrence
Alkali-sink Goldfields (*Lasthenia chrysantha*)	-/-/1B.1 Feb-Apr	Vernal pools, alkaline microhabitat. Found at elevations between 0 and 655 feet.	**None:** No vernal pool habitat occurs in the Project Area.
Brittlescale (*Atriplex depressa*)	-/-/1B.2 Apr-Oct	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Alkaline and clay microhabitat. Found at elevations between 5 and 1,050 feet.	**None:** No native habitat or vernal pool habitat occurs in the Project Area.
California Alkali Grass (*Pucinellia simplex*)	-/-/1B.2 Mar-May	Chenopod scrub, meadows and seeps, valley and foothill grassland and vernal pools. Sinks, alkaline, flats, lake margins, and vernally mesic microhabitats. Found at elevations between 5 and 3,050 feet.	**None:** No vernal pool habitat or chenopod scrub occurs in the Project Area.
California Jewelflower (*Caulanthus californicus*)	FE/CE/1B.1 Feb-May	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland. Found at elevations between 200 and 3,280 feet.	**None:** The Project Area is composed entirely from agricultural land and lacks a native seedbank.
California Satintail (*Imperata brevifolia*)	-/-/2B.1 Sep-May	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub. Mesic microhabitat. Found at elevations between 0 and 3,985 feet.	**None:** No wetland habitat or shrub-dominated habitat occurs in the Project Area.
Earlimart Orache (*Atriplex cordulata* var. *erecticaulis*)	-/-/1B.2 Aug-Sep (Nov)	Valley and foothill grassland. Vernally mesic microhabitat. Found at elevations between 130 and 330 feet.	**None:** Though some grassland occurs in the Project Area it is not within vernal pool or vernal swale habitat. Species not observed during current survey effort.
Ewan's Larkspur (*Delphinium hansenii* ssp. *ewanianum*)	-/-/4.2 Mar-May	Cismontane woodland, valley and foothill grassland. Found at elevations between 195 and 1,970 feet.	**None:** The Project Area is composed entirely from agricultural land and

Common/ Scientific Name	*Status Fed/CA/CNPS/ Bloom Period	Habitat Description	Potential for Occurrence
			lacks a native seedbank.
Heartscale (*Atriplex cordulata* var. *cordulata*)	-/-/1B.2 Apr-Oct	Chenopod scrub, meadows and seeps, valley and foothill grassland. Microhabitats sometimes saline, sometime alkaline. Found at elevations between 0 and 1,835 feet.	**None:** The Project Area is composed entirely from agricultural land and lacks a native seedbank.
Lesser Saltscale (*Atriplex miniscula*)	-/-/1B.1 May-Oct	Chenopod scrub, playas, valley and foothill grassland. Microhabitats are alkaline or sandy. Found at elevations between 50 and 655 feet.	**None:** The Project Area is composed entirely from agricultural land and lacks a native seedbank.
Recurved Larkspur (*Delphinium recurvatum*)	-/-/1B.2 Mar-Jun	Chenopod scrub, cismontane woodland, valley and foothill grassland. Alkaline microhabitat. Found at elevations between 10 and 2,590 feet.	**None:** The Project Area is composed entirely from agricultural land and lacks a native seedbank.
San Joaquin Adobe Sunburst (*Pseudobahia peirsonii*)	FT/CE/1B.1 Feb-Apr	Cismontane woodland, valley and foothill grassland. Adobe or clay microhabitat. Found at elevations between 295 and 2,625 feet.	**None:** The Project Area is composed entirely from agricultural land and lacks a native seedbank.
Spiny-sepaled Button-celery (*Eryngium spinosepalum*)	-/-/1B.2 Apr-Jun	Vernal pools, valley and foothill grassland. Found at elevations between 260 and 3200 feet.	**None:** No vernal pool habitat occurs in the Project Area.
Subtle Orache (*Atriplex subtilis*)	-/-/1B.2 (Apr) Jun-Sep (Oct)	Valley and foothill grassland. Found at elevations between 130 and 330 feet.	**None:** The Project Area is composed entirely from agricultural land and lacks a native seedbank.

*Listing Status Notes:

Federal: FE – Federally listed Endangered
FT – Federally listed Threatened
FC – Federal Candidate Species

State: CE – State Listed as Endangered
SE – State listed Endangered
ST – State listed Threatened
SC – State Candidate Species
SR – State Rare Species

CRPR: California Native Plant Society Rare Plant Rank
1A – Considered extirpated in CA
1B – Rare, threatened, or endangered in CA and elsewhere
2 – Rare, threatened, or endangered in CA but common elsewhere
4 – Limited distribution (Watch-list)

CRPR Extensions 0.1 – Seriously endangered in California
0.2 – Fairly endangered in California
0.3 – Not very endangered in California

4.1 Special-Status Species Descriptions

This section describes identifiable physical characteristics and habitat requirements for special-status species identified in the CNDDB records search that were within 5 miles of the Project Area. It also discusses their potential to occur following the findings of the survey.

Special-Status Wildlife Species

Birds

Burrowing owl (A*. cunicularia*)

The burrowing owl (*Athene cunicularia*) is federally protected by the Migratory Bird Treaty Act of 1918 in the United States, Canada and Mexico. They are considered by the U.S. Fish and Wildlife Service (USFWS) to be a Bird of Conservation Concern (BCC). These small owls are between 7.5 to 10 inches (19-25 cm) tall with a wingspan of 21 to 24 inches (53-61 cm). They weigh between 4.5 to 9 ounces (128 – 255 grams). Unlike most owls, burrowing owl males are slightly heavier than females and have a longer wingspan.

Burrowing owls typically breed from mid-March through August. If owls are nesting, the site must be avoided until the chicks have fledged or it has been determined the nest failed. Chicks may appear at the burrow entrance when they are about 10 days old. Usually nesting in abandoned ground squirrel burrows, the nest chamber might be lined with excrement, pellets, debris, grass, feathers; sometimes unlined. General habitat includes open dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.

The Project Area has approximately 76 acres of fallow millet-rice fields and unpaved dirt roads with small mammal burrows which is suitable habitat for this species. The closest and nearest occurrence of burrowing owl is 0.25 miles west, across Morrison Street at the KCOK Phase 9 housing development. During this sighting, a pair of burrowing owls was observed outside a small mammal burrow with whitewash and feathers at the mouth of the burrow. The observation was part of the Habitat Assessment conducted in March 2022 for the KCOK housing development. A follow-up survey in May 2023 noted the burrow collapsed and no burrowing owl was observed.

Swainson's hawk (*B. swainsoni*)

Swainson's hawk is listed as Threatened on the State level and is a listed species under the Migratory Bird Treaty Act. However, due to its common distribution throughout the country, it is not listed at the Federal level. This species favors open habitat for foraging such as agricultural fields, pastures, and row crops. They nest in scattered stands of eucalyptus, willow, oak, cottonwood, and conifers. On occasion, Swainson's hawk will nest on a power pole or transmission tower. The location of Swainson's hawk nests is typically on the tallest point in or near an open field, giving this species a full view of its foraging area while nesting.

Due to their late return to California for the breeding season, Swainson's hawk often uses the same

nests for serval breeding seasons and even generations. If a nest is constructed, it is often constructed with loose bundles of sticks and debris quickly stacked together. They are also territorial of their nests and will dive bomb any other species attempting to use their nest. Red-tailed hawk and great horned owls, which overlap in habitat, are species known to use Swainson's hawk nests. The incubation period for Swainson's hawk is approximately 35 days, and the nesting period is 17 to 22 days. The breeding season for this species begins in March and ends in September.

The Project Area is primarily active agricultural land with some potential nesting in the bird box on the electrical poles and foraging habitat in the fallow agricultural fields. The closest and nearest known occurrence of Swainson's Hawk was over 5 miles from the Project Area. A Swainson's hawk and nesting bird survey should be conducted in all of the bird boxes on and near the Project Area prior to ground disturbing activity and removal of poles in the Project Area.

Mammals

San Joaquin kit fox (*V. macrotis mutica*)

The San Joaquin kit fox is listed as Threatened at the Federal level and Endangered at the State level. They are petite, light-colored canids, approximately 20 inches in length, with bushy, black-tipped tails, large ears, and pointed snouts.

The San Joaquin kit fox is a desert-adapted species occurring predominantly in arid, flat grasslands, scrublands, and alkali meadows where vegetation structure is relatively short. This species uses dens year-round and needs loose-textured soils suitable for burrowing. They primarily prey on kangaroo rats and other small rodents, and occasionally on large insects and rabbits. A typical kit fox den is anywhere from four to 10 inches in diameter. The shape of the opening to the den is taller than it is wide, often described as a "keyhole" shape. Dens usually have dirt berms and matted vegetation adjacent to the entrances, with tracks and prey remains nearby. They may also utilize man-made structures such as pipes and culverts as dens.

There were no signs of San Joaquin kit fox den sites or activity at the time of the Habitat Assessment. Suitable habitat for this species is medium within the Project Area. A search of CNDDB records indicates the nearest occurrence of kit fox is 1.07 miles southeast from the Project Area. One other observation of San Joaquin kit fox was recorded 4.07 miles of the Project Area, but all San Joaquin kit fox sightings was between 1972 and 1975. Due to urbanization of the surrounding area, lack of suitable habitat in the form of natural grassland habitat, and distance of other known occurrences from the site, occurrence of San Joaquin kit fox within the vicinity of the Project Area is high, but the proposed Project is unlikely to adversely affect any population of this species.

Western mastiff bat (*E. perotis californicus*)

Western mastiff bat is a State listed Species of Special Concern. This species has a brown fur body length of 14 to 19 centimeters (5.5 to 7.5 inches), a wingspan of over 56 centimeters (22 inches), and body mass range from 60 to 70 grams (2.1 to 2.5 ounces). Western mastiff bat is the largest native bat in the United States. Thus such morphology allows for rapid, sustained flight but limits maneuverability. This manner of flight is adaptive to flying in open habitats.

Western mastiff bat catches and feeds on insects while in flight. The insects consumed are typically relatively small, low-flying and weak-flying forms. Over rugged terrain western mastiff bats naturally forage at much greater heights of 60 meters (195 feet) above the ground. Crevices in cliff faces, high buildings, trees, and tunnels are required for roosting. When roosting in rock crevices, this species needs vertical faces to drop off to take flight.

Western mastiff bat has yearlong nocturnal activity. They generally go into daily torpor from December through February but usually resumes activity each night to feed, except when temperatures drop below 5°C (41°F). Nocturnal foraging range may exceed 24 kilometers (15 miles) from roost sites. Western mastiff bat rarely uses night roost and has an exceptionally long foraging period, up to 6-7 hours per night. Their echolocationary squeaks can be heard from up to 300 meters (980 feet) away. They are non-migratory with no known home range and no known territory. They are known to roost along or in small colonies with fewer than 100 bats, and commonly shares roost with other large bats such as Eptesicus fuscus, Antrozous pallidus, and Tadarida brasiliensis.

Western mastiff bat can be found in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban. Roosts are often found in crevices in cliff faces, buildings, trees and tunnels. Their range includes the southeastern San Joaquin Valley and Coastal Ranges, from Monterey County southward through southern California, and from the coast eastward to the Colorado Desert. Suitable habitat for western mastiff bat consists of extensive open areas with abundant roost locations provided by crevices in rock outcrops and buildings. They need at least 3 meters (9.8 feet) of open space under roosting spot for takeoff.

Nursery roosts are tight rock crevices at least 90 centimeters (35 inches) deep and 5 centimeters (2 inches) wide, or crevices in buildings. The duration of pregnancy is between 80 to 90 days with mating beginning in early spring (March). The gestation period is unknown. Parturition occurs from early April through August or September, and varies more than any other bat species in the United States. One young is produced per female bat per year.

During the field survey, there were no signs of western mastiff bat observed within the Project Site. However, suitable habitat was present for western mastiff bat. The bird boxes on and around the Project Area have openings situated above the ground far enough for this species to takeoff. The openings to the bird box are large and not ideal, but the boxes are large enough to accommodate the bats for day or feeding roosts. A search of CNDDB records indicates the nearest and most recent occurrence of western mastiff bat is 5 miles to the Project Site. During this occurrence, an individual bat was detected using acoustic diagnostic and night-vision surveys. The bat was observed along the northern bend of the Packwood Creek about 0.5 miles west of Mooney Boulevard in the City of Tulare.

Reptiles

Western pond turtle (*A. marmorata*)

The western pond turtle is listed as a Species of Special Concern on the State level. It is found throughout California west of the Pacific Crest, and along the Mojave River watershed, ranging from sea level to 4,500 feet. The western pond turtle's diet consists of plant material and invertebrates-- any life forms found near water sources. Mating typically occurs between April and May, but this species has

been observed relocating to find new food sources or found at breeding locations between March and June. This species requires basking sites and suitable upland habitat for egg-laying.

The irrigation water pump pond lined in dirt with southern cattail provides suitable habitat for this species. The fallow field in combination with the dirt-lined irrigation water pump pond provides several basking sites. No CNDDB data was available for this species.

Special-Status Plant Species

There is no potential for special-status plant species to occur in the Project Area because no natural vegetation communities occur in the Project Area and the land has been active agricultural land for more than fifty years, including irrigated row crops, and the Project Area lacks any native seed bank.

4. Findings

During the Biological Assessment, Soar Environmental did not observe any of the referenced special-status species within the Project Area or environmental footprint. However, grading of the Project Area will result in removing small mammal burrows and some woodland and aquatic habitat. The findings for this report are summarized below.

Critical Habitats

No critical habitats occur within the vicinity of the Project's environmental affect area, Project Area or project footprint.

Project Impacts

The project will cause permanent impacts to active agricultural land in the Project Area. The Project Area contains a bird box, a fallow field of irrigated row crops and several unpaved dirt roads with numerous small mammal burrows. Potential wildlife resources the Project could impact would be aquatic species dependent on the proximity to land such as the western pond turtle, burrowing species such as burrowing owls, open foraging bird species such as Swainson's hawk, and terrestrial species such as San Joaquin kit fox, that may forage and disperse over the property with its ground squirrel burrows. Impacts would include reduction in nesting, foraging and dispersal habitat due to the removal and loss of open agricultural land with its resources such as unpaved dirt roads and the irrigation pump pond.

One agricultural ditch occurs on the property along the entire northern boundary. The irrigation pump pond associated with this ditch has water and vegetation which could provide basking areas for western pond turtle. The agricultural ditch connects and continues through the irrigation pump pond and connects to other waters offsite to the north and west. This agricultural ditch and the affiliated irrigation pump pond is not considered a jurisdictional feature under the Clean Water Act.

5. Conclusion

From the information gathered in the data records search and analysis of the habitat on site during the survey there is limited potential for native plant and wildlife habitat occupancy in the Project Area given that the majority of the property is active agricultural land. However, of the regionally occurring species, San Joaquin kit fox, burrowing owl, western pond turtle, western mastiff bat, and Swainson's hawk have the highest potential to occur or be impacted by development of the project.

6. Recommendations

The following mitigation measures are intended to reduce and minimize impacts under CEQA, the California Endangered Species Act, and the federal Endangered Species Act for effects on species and habitats. Implementation of the following mitigation measures would reduce project-related affects to covered species and other biological resources to less than significant.

7. Recommended Mitigation Measures

Mitigation Measure 1: Swainson's Hawk Nesting Habitat

If construction, grading, or project-related improvements are to commence between March 1 and September 15, a focused survey for Swainson's hawk nests on the site and within ¼ mile of the site shall be conducted by a qualified biologist no later than 30 days prior to the start of construction work (including clearing and grubbing).

If active nests are found, the CDFW shall be contacted to determine appropriate protective measures, and these measures shall be implemented prior to the start of any ground-disturbing activities. If no active nests are found during the focused survey, no further mitigation will be required.

Mitigation Measure 1a: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den survey

If project-related activities are scheduled between February 1 to August 31 (the typical nesting season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14) calendar days prior to the beginning of Project-related activities.

The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.

Mitigation Measure 1b: Active Nests or Roosts or Burrows or Dens

If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or

burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

If an occupied burrowing owl burrow is located the Biologist will consult with CDFW to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair.

If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.

Mitigation Measure 1c: Project Delay

If a lapse in project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.

8. Study Limitations

This Report has been prepared in accordance with generally accepted environmental methodologies and contains all the limitations inherent in these methodologies. The Report documents site conditions that were observed during field reconnaissance and do 008not apply to future conditions. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this Report.

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APPENDIX A:

Project Area Photographs

Photo 1. Southwest facing photo of above ground water pump on Tulare Colony Ditch.



Photo 2. Southwest facing photo of above ground water pump area.



Photo 3. Southwest facing photo of bird box on an abandoned pole



Photo 4. West facing photo close up of bird box referenced in Photo 3



Photo 5. West facing photo of bird box on pole



Photo 6. West facing photo close up of bird box referenced in Photo 5



Photo 7. West facing photo of bird box on pole near above ground water pump



Photo 8. North facing photo of bird box referenced in Photo 6



Photo 9. Southeast facing photo of greenhouse on west boundary of Project Area



Photo 10. East facing photo of a small mammal burrow on unpaved dirt roads in the Project Area



Photo 11. South facing photo of a mall mammal burrow on unpaved dirt roads in the Project Area



Photo 12. West facing photo of a mall mammal burrow on unpaved dirt roads in the Project Area



Photo 13. Unknown animal digging under fence line near the south boundary of the Project Area



Photo 14. Northeast facing photo of European sterling using the bird box on the adjacent property



Photo 15. North facing photo of Project Area from center



Photo 16. East facing photo of Project Area from center



Photo 17. South facing photo of Project Area from center



Photo 18. West facing photo of Project Area from center



Photo 19. Southwest facing photo of cultivated trees on adjacent property on the southeast boundary of the Project Area



Photo 20. Southwest facing photo of potted blueberries in the south section of the Project Area



Photo 21. West facing photo of the north boundary of Project Area; Prosperity Avenue (right)



Photo 22. West facing photo of fallow field



Photo 23. South facing photo of field workers attending to potted blueberries



Photo 24. North facing photo of water pump on the Tulare Colony Ditch in the middle of the Project Area



APPENDIX B:

U.S. Fish & Wildlife Service IPaC Resource List

IPaC U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Tulare County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are not shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

NOT FOR CONSULTATION

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Buena Vista Lake Ornate Shrew Sorex ornatus relictus Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1610	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered
Tipton Kangaroo Rat Dipodomys nitratoides nitratoides Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7247	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS

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California Tiger Salamander Ambystoma californiense — Threatened
There is final critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2076

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
San Joaquin Adobe Sunburst Pseudobahia peirsonii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2931	Threatened

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Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

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What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird

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species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20

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Oak Titmouse Baeolophus inornatus Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

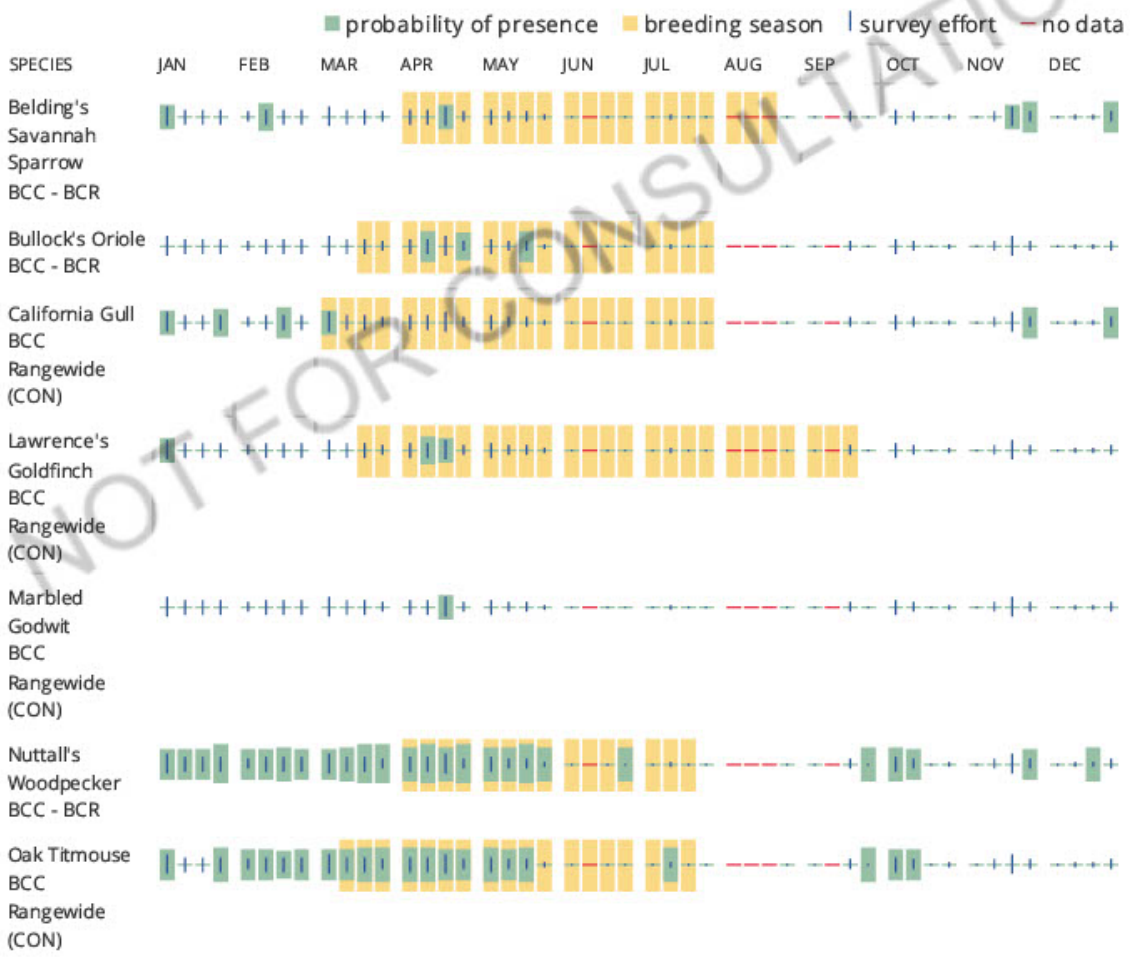
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

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What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar

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means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

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This location overlaps the following wetlands:

RIVERINE
R4SBCx
R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does not replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies

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concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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APPENDIX C:

California Department of Fish and Wildlife RareFind

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Cairns Corner (3611922) OR Visalia (3611933) OR Tulare (3611923) OR Exeter (3611932) OR Tipton (3611913) OR Woodville (3611912) OR Paige (3611924) OR Goshen (3611934) OR Taylor Weir (3611914))
AND County IS (Tulare)
AND Elevation IS greater than OR equal to "290"
AND Elevation IS less than OR equal to "310"

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali-sink goldfields *Lasthenia chrysantha*	PDAST5L030	None	None	G2	S2	1B.1
American bumble bee *Bombus pensylvanicus*	IIHYM24260	None	None	G3G4	S2	
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G2	S2	1B.2
California satintail *Imperata brevifolia*	PMPOA3D020	None	None	G3	S3	2B.1
Earlimart orache *Atriplex cordulata var. erecticaulis*	PDCHE042V0	None	None	G3T1	S1	1B.2
lesser saltscale *Atriplex minuscula*	PDCHE042M0	None	None	G2	S2	1B.1
recurved larkspur *Delphinium recurvatum*	PDRAN0B1J0	None	None	G2?	S2?	1B.2
San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2	S3	
subtle orache *Atriplex subtilis*	PDCHE042T0	None	None	G1	S1	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S4	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G4G5T4	S3S4	SSC
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3S4	SSC

Record Count: 13

Commercial Version -- Dated December, 1 2023 -- Biogeographic Data Branch
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Report Printed on Monday, December 11, 2023
Information Expires 6/1/2024

APPENDIX D:

California Native Plant Society Rare Plant Inventory

CNPS Rare Plant Inventory

California Native Plant Society

Search Results

13 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3611922:3611933:3611923:3611932:3611913:3611912:3611924:3611934:3611914], 290 feet between Plant low elevation and high elevation, 310 feet between Plant low elevation and high elevation

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex cordulata var. erecticaulis	Earlimart orache	Chenopodiaceae	annual herb	Aug-Sep(Nov)	None	None	G3T1	S1	1B.2	Yes	2001-01-01	 © 2009 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	 © 2009 Zoya Akulova
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.
Atriplex subtilis	subtle orache	Chenopodiaceae	annual herb	(Apr)Jun-Sep(Oct)	None	None	G1	S1	1B.2	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	1B.1	Yes	1984-01-01	No Photo Available

Delphinium hansenii ssp. ewanianum	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	Yes	1994-01-01	No Photo Available
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G3	S3	2B.1		2006-12-26	 © 2020 Matt C. Berger
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	Yes	2019-09-30	 © 2009 California State University, Stanislaus
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available

Showing 1 to 13 of 13 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 11 December 2023].

APPENDIX E:

USDA-NRCS Soil Report

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tulare County, Western Part, California

Lagomarsino Housing Development



December 11, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


Custom Soil Resource Report
Soil Map
E Prosperity Ave
Avenue 240
Morrison St
124
130
Soil Map may not be valid at this scale.
Map Scale: 1:6,470 if printed on A portrait (8.5" x 11") sheet.
Meters
Feet
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84
N
9

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, Western Part, California
Survey Area Data: Version 17, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Custom Soil Resource Report

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
124	Hanford sandy loam, 0 to 2 percent slopes	49.4	34.7%
130	Nord fine sandy loam, 0 to 2 percent slopes	92.8	65.3%
Totals for Area of Interest		**142.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Custom Soil Resource Report

Tulare County, Western Part, California

124—Hanford sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp4v
Elevation: 220 to 490 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 6 inches: sandy loam
C1 - 6 to 30 inches: fine sandy loam
C2 - 30 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 7.0
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Tujunga
Percent of map unit: 5 percent
Landform: Flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Exeter
Percent of map unit: 5 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Calgro
Percent of map unit: 3 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Yettem
Percent of map unit: 2 percent
Landform: Alluvial fans, flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

130—Nord fine sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hp51
Elevation: 190 to 520 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition
Nord and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nord

Setting
Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex, linear

Parent material: Alluvium derived from mixed

Typical profile

Ap - 0 to 11 inches: fine sandy loam
C1 - 11 to 38 inches: stratified sandy loam to loam
C2 - 38 to 50 inches: stratified loamy coarse sand to coarse sandy loam
2Btb - 50 to 72 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rare
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 3 percent
Landform: Alluvial fans, flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Tujunga

Percent of map unit: 3 percent
Landform: Flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Grangeville, saline-sodic

Percent of map unit: 3 percent
Landform: Alluvial fans, flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: Yes

Akers

Percent of map unit: 2 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Colpien

Percent of map unit: 2 percent

Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Tagus
Percent of map unit: 2 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

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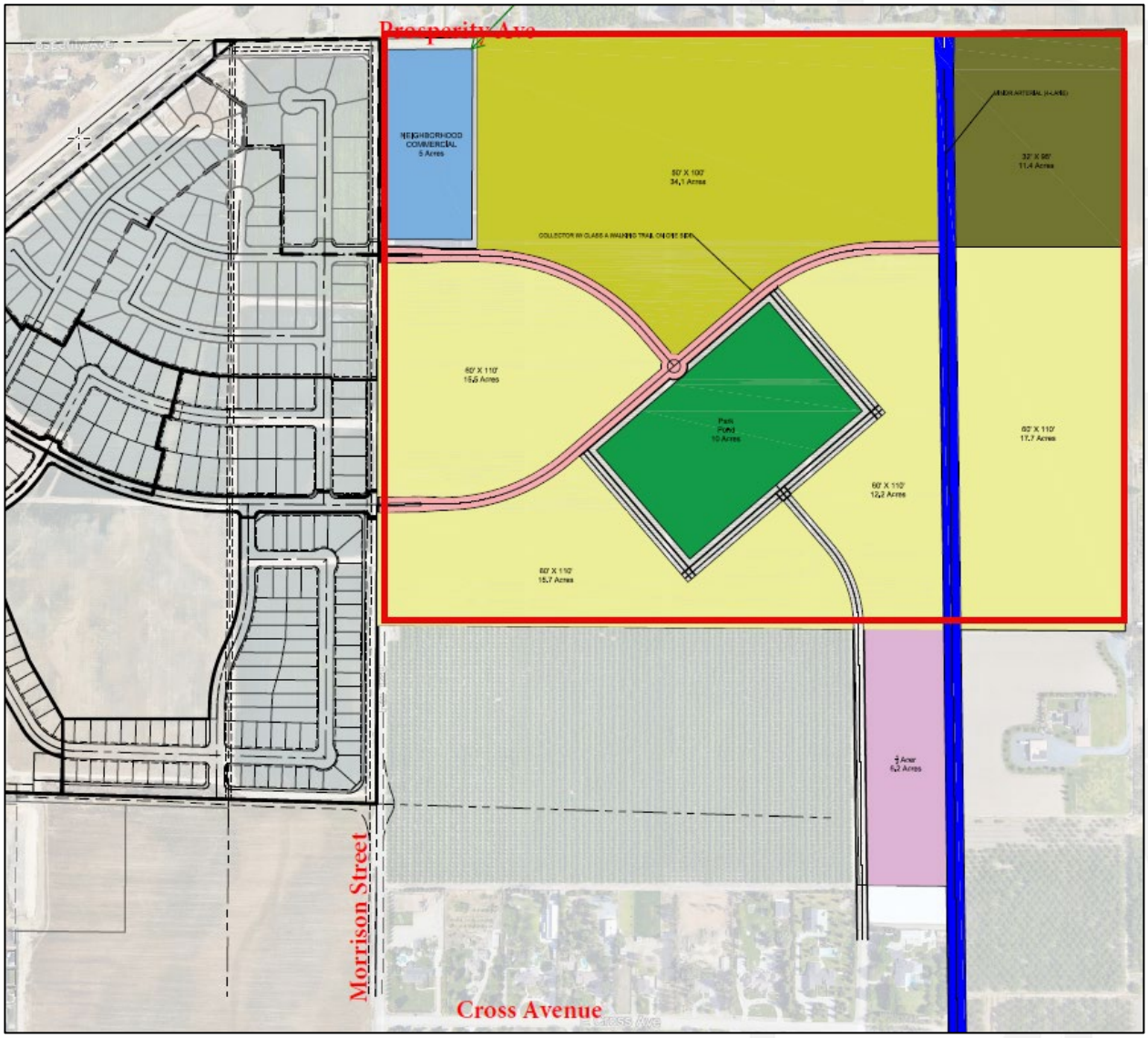
APPENDIX F:

Site Plan



Appendix C

Cultural Resource Assessment

Corporate Headquarters
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Phase I Cultural Resources Assessment
Lagomarsino Housing Subdivision Project, Tulare, CA 93274
Assessor Parcel Numbers
172-080-002, 172-010-021, 172-010-022, and 184-020-010
Tulare, County, California

Prepared for

4CREEKS
324 South Santa Fe Street, Suite A
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Prepared by

1322 E Shaw Ave.
Fresno, CA 93710

Heather Froshour, M.A., R.P.A., Senior Archaeologist

February 2, 2024

EXECUTIVE SUMMARY

Soar Environmental Consulting, Inc. (Soar Environmental) has been retained by 4Creeks, Inc. (4Creeks) to prepare a Phase 1 Cultural Resources Assessment (Phase 1 CRA) as part of an Initial Study, for a Housing Subdivision Development Project (Project) in the city of Tulare (City), in accordance with the California Environmental Quality Act (CEQA) prior to implementation of the proposed Project. The proposed project is to construct 525 single family housing units on 140.32-acres on Assessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010. The purpose of the CRA is to provide an inventory of the known and potentially significant cultural resources within the Project area through a California Historical Records Information search (CHRIS) using the Southern San Joaquin Valley Information Center (SSJVIC), as well as a Sacred Lands File & Native American Contacts List Request through the Native American Heritage Commission (NAHC).

The results of the records search indicate two (2) cultural resources recorded within 0.50-mile of the Project area. The records searches indicate no recorded resources within the Project area. The pedestrian survey identified no existing resources within the Project area. No site testing or mitigation measures are required, unless previously undiscovered cultural resources are detected during construction.

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1.0 Introduction

This report details the results of a Phase 1 Cultural Resources Assessment in support of the proposed housing development on 140.32-acres in Tulare, California, on Assessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010 (Figures 1-5). This Phase 1 report is prepared pursuant to the California Environmental Quality Act (CEQA), PRC Sections 21082, 21083.2, and 21084.1, and California Code of Regulations 15064.5.

Heather Froshour completed the archival review, the Native American consultation, field survey, and prepared this Phase 1 report. Ms. Froshour is Soar Environmental's Senior Archaeologist who meets the professional standards of the U.S. Secretary of the Interior for archaeology (36 CFR 61) and is certified by the Register of Professional Archaeologists. Under direct supervision, Evan Studley, B.S., and Maria Hawley B.A., assisted Ms. Froshour in the Phase 1 pedestrian field survey.

Soar Environmental requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) for the Project area as well as a 0.50-mile buffer. The archival research for this Phase 1 report was negative for archaeological sites or historical resources within the Project area. The archival record search reported two (2) recorded resources within 0.5-mile radius of the Project area. The records search revealed two (2) previous cultural resources surveys had been conducted in the Project area. A total of four (4) additional cultural resource survey reports have been completed within a 0.50-mile radius of the Project area.

As part of the background research, Soar Environmental also requested a search of the Sacred Lands File (SLF) from the Native American Heritage Commission (NAHC). The results of the records review and SLF search were negative. The NAHC suggested contacting five (5) individuals representing three (3) Native American tribal groups to find out if they have additional information about the Project area. Soar Environmental sent outreach letters to all five (5) recommended tribal individuals. No response was received.

Soar Environmental conducted an intensive pedestrian survey of the project on December 16, 2023. This field survey was negative for surface archaeological resources within the Project area. As currently designed, the proposed project will not impact any known in situ archaeological sites or historical resources.

It is recommended, however, in the event that cultural resources are encountered during construction activities associated with the Project, a qualified archaeologist shall be obtained to assess the significance of the find in accordance with the criteria set forth in CEQA Guidelines 15064.5(f). In addition, Health and Safety Code 7050.5, CEQA 15064.5(e), and Public Resources Code 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

1.1 Project Description

The Project proposes the construction of a 525-unit housing subdivision at the northeast corner of Prosperity Avenue and Road 126 and the northwest corner of Prosperity Avenue and Morrison Street, in the city of Tulare (Figures 1-5). The proposed Project to construct single-family homes lies within the combined 140.32-acre parcels, APNs 172-080-002, 172-010-021, 172-010-022 and 184-020-010. These parcels are comprised of fallow agricultural fields on the outskirts of the city. Grading of the area will be accomplished using a backhoe and grader.

The project will require the development of roads and sidewalks around and throughout the property. A park pond will be located in the south-central area of the Project Site surrounded by walking trails (Figure 5). Since the entire property will be graded for the housing project during construction activities, the trees in the southwest section of the property located within a 3-acre farm equipment storage area would be removed (Figures 6-18).

1.2 Existing Condition

The Project area is located on two parcels of 140.32-acres combined located approximately 0.68- kilometers north from E Tulare Avenue/Highway 137, Tulare, California, at Assessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010 (Figure 1-5). The Project area is approximately 6-kilometers south from Cameron Creek. The Project area is located in Tulare County within Sections 5 and 6, Township 20S, Range 25E, Mount Diablo Base Meridian, as depicted on the Tulare, CA 7.5' U. S Geological Survey (USGS) topographical quadrangle (Figures 1-2). Row crops surround the Project Area to the northeast and west, fallow fields to the immediate east with commercial and urban residential areas 0.5 miles east, urban residential to the north, and a mix of rural residential and orchards to the south. The Project area consists of 74-acres of fallow millet-rice fields, 60-acres of potted blueberries, 0.5-acre pump station stockpond with southern cattail, 3-acres farm equipment storage area, and 2.82-acres of unpaved dirt roads throughout the Project area. The Tulare Colony Ditch connects with Deep Creek 171 feet west, Outside Creek is 5.2 miles east, and Tulare Lake is 30 miles southwest to the Project area. The irrigation system located on the north boundary of the Project area has hydrologic connectivity to Tulare Lake, a seasonal lake and playa. A new subdivision, including several city streets, is being developed on the cleared properties to the east.

Surface soils consist primarily of the Nord soil series within the east and the Hanford soil series within the west half of the Project area (Figure 4). The Nord soil series is typically very deep, well-drained, and formed in mixed alluvium dominantly from granite and sedimentary rocks. This soil is made up of grayish brown fine sandy loam at surface with brown fine sandy loam below. The Hanford soil series is typically very deep, well-drained, and formed in moderately coarse alluvium dominantly from granite. This soil is made up of pale brown fine sandy loam at surface with pale brown fine sandy loam below. The elevation of the Project area is fairly level ranges from 295-302 feet (ft) above mean sea level. The properties have functioned as pot farming and irrigated

row crops and include a vegetated pump station irrigation pond and an underground irrigation drainage ditch along the northern boundary.

2.0 REGULATORY SETTING

Federal, State and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions that they undertake or regulate. The National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA) are the basic federal and state laws governing preservation of historic and archaeological resources of national, regional, State and local significance.

2.1 Federal

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historic Preservation Act (NHPA) of 1966. Section 106 of NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties" are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites which are determined eligible for listing on the National Register of Historic Places. The criteria for determining National Register eligibility are found in 36 CFR Part 60. Amendments to the NHPA (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. While federal agencies must follow federal regulations, most projects by private developers and landowners do not require this level of compliance. Federal regulations only come into play in the private sector if a project requires a federal permit or if it uses federal money.

2.2 State of California

California Register of Historical Resources

In California, the term “historical resource” includes “any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California” (California PRC § 5020.1[j])(State of California 2021). In 1992, the California legislature established the California Register of Historical Resources (CRHR) “to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change” (California PRC § 5024.1(a)). The criteria for listing resources on the CRHR, enumerated in the following text, were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to California PRC § 5024.1(c) (1– 4), a resource is considered historically significant if it (i) retains “substantial

integrity," and (ii) meets at least one of the following criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

2) Is associated with the lives of persons important in our past.

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

4) Has yielded, or may be likely to yield, information important in prehistory or history

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places (NRHP), and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Health and Safety Code, §7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code, §7050.5, requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (California Health and Safety Code, §7050.5b). California PRC §5097.98, also outlines the process to be followed in the event that remains are discovered. If the County Coroner determines or has reason to believe the remains are those of a Native American, the County Coroner must contact the California NAHC within 24 hours (California Health and Safety Code, §7050.5c)(State of California 2021). The NAHC will notify the most likely descendant. With the permission of the landowner, the most likely descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the most likely descendant by the NAHC. The most likely descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains, and items associated with Native Americans.

California State Assembly Bill 52

Assembly Bill (AB) 52 of 2014 amended California PRC § 5097.94, and added California PRC §21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources must be considered under CEQA and also provided for additional Native American consultation requirements for the lead agency. California PRC §21074, defines tribal cultural resources as follows:

(a) Section 21074 of the Public Resources Code states that "tribal cultural resources" are either of the following:

> (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
>
> > (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
> >
> > (B) Included in a local register of historical resources as defined in subdivision (k) of §5020.1.
>
> (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of §5024.1. In applying the criteria set forth in subdivision (c) of §5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe. A cultural landscape that meets the criteria of subdivision:
>
> > (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
> >
> > (b) A historical resource described in §21084.1, a unique archaeological resource as defined in subdivision (g) of §21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of §21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American tribes located on the contact list maintained by the Native American Heritage Commission (NAHC). This includes California Native American groups that are traditionally and culturally affiliated with the project, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report (EIR).

Section 9 of AB 52 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a

significant effect on the environment." Section 6 of AB 52 added §21080.3.2 to the California PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding Project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (California PRC §21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (California PRC §21082.3[a]).

Native American Human Remains

State law (California PRC §5097 et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and established the NAHC.

In the event that Native American human remains, or related cultural material are encountered, §15064.5(e) of the CEQA Guidelines (as incorporated from PRC §5097.98) and California Health and Safety Code, §7050.5, defines the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, excavation or other disturbances shall be suspended on the site, or any nearby area reasonably suspected to overlie adjacent human remains or related material. Protocol requires that the County Coroner or County-approved Coroner represented be contacted in order to determine if the remains are of Native American origin. Should the coroner determine the remains to be Native American, the coroner must contact the NAHC within 24 hours. The most likely descendant may make recommendations to the landowner or the person responsible for the excavation work for means of treating, with appropriate dignity, the human remains, and any associated grave goods as provided in California PRC §5097.98 (14 CCR 15064.5(e))(State of California 2021).

2.3 Local

Tulare County

Chapter 8.6 of the Tulare County General Plan of 2012 promotes the preservation of cultural and historic resources through managing and protecting sites of cultural and archeological importance for the benefit of present and future generations (County of Tulare 2012).

The following policies are outlined for the preservation of cultural resources:

> **ERM-6.1 Evaluation of Cultural and Archaeological Resources**
> The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.

ERM-6.2 Protection of Resources with Potential State or Federal Designations
The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.

ERM-6.3 Alteration of Sites with Identified Cultural Resources
When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

ERM-6.4 Mitigation
If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.

ERM-6.5 Cultural Resources Education Programs
The County should support local, State, and national education programs on cultural and archaeological resources.

ERM-6.6 Historic Structures and Sites
The County shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and parks. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

ERM-6.7 Cooperation of Property Owners
The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities, and encourage public support for the preservation of these resources.

ERM-6.8 Solicit Input from Local Native Americans
The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

ERM-6.9 Confidentiality of Archaeological Sites
The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and

the unauthorized removal of artifacts.

ERM-6.10 Grading Cultural Resources Sites
The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq..

City of Tulare

Under Chapter 4, Conservation and Open Space Element, within the General Plan of the City of Tulare states "The General Plan seeks to balance the need for growth with the need for the conservation and enhancement of the area's natural and cultural resources, frequently in cooperation with other agencies." "Cultural resources provide the historical context for the city. The authentic remnants of the city's cultural legacy provide an irreplaceable tangible link to the past. These assets serve as material anchors and their preservation is vital to connecting the present-day community with its historical roots" (City of Tulare 2014).

The following policies are outlined for the preservation of cultural resources:

Section B.5. Cultural and Archaeological Resources

Goal COS-5 To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.

Policies

COS-P5.1 Archaeological Resources. The City shall support efforts to protect and/or recover archaeological resources.

COS-P5.2 Evaluation of Historic Resources. The City shall use appropriate State and Federal standards in evaluating the significance of historical resources that are identified in the city.

COS-P5.3 Historic Preservation. The City shall encourage the preservation of historic residences and neighborhoods wherever appropriate.

COS-P5.4 Historic Buildings. The City shall encourage the preservation and adaptive use of historic buildings, particularly in the downtown.

COS-P5.5 Historic Structures and Sites. The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and districts. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Building.

COS-P5.6 Protection of Resources with Potential State or Federal Designations. The City shall encourage the protection of cultural and archaeological sites with potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.

COS-P5.7 State Historic Building Code. The City shall utilize the State Historic Building Code for designated properties.

COS-P5.8 Design Compatibility with Historic Structures. The City shall ensure design compatibility of new development within close proximity to designated historic structures and neighborhoods.

COS-P5.9 Discovery of Archaeological Resources. In the event that archaeological/ paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist/paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of project design as previously approved by the City.

COS-P5.10 Discovery of Human Remains. Consistent with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). If any human remains are discovered or recognized in any location on the project site, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

♦ The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and

♦ If the remains are of Native American origin,

- The descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

- The Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or

- The landowner or his or her authorized representative rejects any timely recommendations of the descendent, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.

COS-P5.11 Impact Mitigation. If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.

COS-P5.12 Mitigation Monitoring for Historical Resources. The City shall develop standards for monitoring mitigation measures established for the protection of historical *resources* prior to development.

COS-P5.13 Alteration of Sites with Identified Cultural Resources. When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site specific investigation has been conducted pursuant to CEQA to define the extent and value of re source, and mitigation measures proposed for any impacts the development may have on the resource.

COS-P5.14 Education Program Support. The City shall support local, state, and national education programs on cultural and archaeological resources.

COS-P5.15 Solicit Input from Local Native Americans. The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

COS-P5.16 Confidentiality of Archaeological Sites. The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/ paleontologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of project design as previously approved by the City.

COS-P5.17 Cooperation of Property Owners. The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities, and encourage public support for the preservation of these resources.

COS-P5.18 Archaeological Resource Surveys. Prior to project approval, the City shall require project applicant to have a qualified archaeologist conduct the following activities: (1) conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories, (2) conduct field surveys where appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

3.0 SETTING

This section of the report summarizes information regarding the physical and cultural setting of the Project area, including prehistoric, ethnographic, and historic contents of the general area. Several factors; including topography, biological resources, and available water sources; affect the nature and distribution of the cultural periods of activity of an area. This background provides a context for understanding the nature of the cultural resources that may be identified within the region of the project.

3.1 Environmental Setting

The Project area is located in west Tulare County, approximately 5.3 miles north-northwest of Tulare, California within the San Joaquin Valley. The San Joaquin Valley is a long, narrow, northwest-trending, alluvial valley that lies between the Sierra Nevada Range to the east, and the Coast Ranges to the west (Wagner, 2002). The region was historically covered with native annual and perennial grasses including San Joaquin saltbush, valley oak savanna, riparian forest, and tule marsh (McNab and Avers, 1996; Munz and Keck, 1973). The climate consists of hot, dry summers with cool, moist winters that provide the best climate for the neighboring pomegranate and citrus orchards and vineyards.

The Project area is best characterized historically as a rural ranching and agricultural region with large populations of both large and small mammals. Prehistorically, the larger mammals inhabiting the Project area would have included mule deer (*Odocoileus hemionus californicus*), black-tailed deer (*O. hemionus columbianus*), tule elk (*Cervus elaphus nannoides*), pronghorn antelope (*Antilocarpa Americana*), mountain lion (*Felis concolor*), and black bear (*Ursus americanus*) (Jameson and Peeters 1988). The small mammals that historically inhabited the Project area included rabbit (*Sylvilagus sp*.), black-tailed jackrabbit (*Lepus californicus*), western gray squirrel (*Sciurus griseus*), coyote (*Canis latrans*), and gray fox (*Urocyon cinereoargenteus*).

The Project site is currently being used for agricultural production and the entire lot has been cleared and maintained aside from several scattered trees.

3.2 Cultural Setting

Cultural resources include prehistoric-era archaeological sites, historic-era archaeological sites, Native American traditional cultural properties, sites of religious and cultural significance, and

historical buildings, structures, objects, and sites. The importance of any single cultural resource is defined by the context in which it was first created, current public opinion and modern yet evolving analysis. From the analytical perspective, temporal and geographic considerations help to define the historical context of the Project area. The importance or significance of a cultural resource is in part described by the context in which it originated or developed. National Park Service Bulletin 16a (1997) describes a historic context as "information about historic trends and properties grouped by an important theme in prehistory or history of a community, state, or the nation during a particular period of time." A context links an existing property to important historic trends, and this allows a framework for determining the significance of a property. Given this, a major goal of the historian is to determine accurate themes of analysis, a task that can only be undertaken by a thorough review of previous researchers' thoughts and ideas, as well as reviewing the literature of the resources.

In California, historians have divided the past into broad categories based on climate models, archaeological dating and written histories. Paleontologists divide time into much larger segments, with defined and named periods of time shortening in timespan as the modern era is reached. For the purposes of this analysis, these periods in history have been summarized below.

3.2.1 Prehistoric Setting

During the Early Holocene epoch (9700 to 4000 B.C.), large game hunting societies populated the area. Culturally significant surface finds in the Tulare Basin have yielded some projectile points similar to particular Paleoindian varieties (i.e., Western Clovis), suggesting an initial occupation pre-dating approximately 11,300 years before present (B.P.). The Middle Holocene epoch (4000 to 1000 B.C.) is characterized by Pinto-like points and groundstone tools, although the association between the epoch and specific societies is not certain.

Olsen and Payen (1968) developed a chronology of four temporally distinct complexes for sites found within the southern San Joaquin Valley. The first complex, the Positas Complex, ranges from 3300 to 2600 B.C. and is characterized by small, shaped mortars, short cylindrical pestles, milling stones, perforated flat cobbles, and sea snail shell beads. The second complex is the Pacheco Complex which ranges from approximately 2600 B.C. to 300 A.D. This complex is divided into Phase B and Phase A. Phase B ranges from 2600 B.C. to 1600 B.C. and is characterized by biface arrow points, abalone shell ornaments, and sea snail shell beads. Phase A ranges from 1600 B.C. to 300 A.D. and is represented by more variation in shell bead types, perforated canine teeth, bone awl, whistles, grass saws, large stemmed and side-notched points, and an abundance of milling stones, mortars, and pestles. The third complex, the Gonzaga Complex, ranges from 300 to 1000 A.D. and is characterized by extended burials, bowl mortars, shaped pestles, squared and tapered stem projectile points, bone awls, grass saws, and a shell industry composed of distinctive shell ornaments and beads. Lastly, the Panoche Complex ranges from 1500 A.D. to European contact (mid to late 1700 A.D.) and is characterized by the presence of fewer milling stones, varied mortars and pestles, small side-notched arrow points, clamshell disc beads, bone awls, whistles, saws, and tubes.

3.2.2 Ethnographic Setting

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous lifeways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

This scarcity of specific detail is particularly apparent in terms of southern valley tribal group distribution. The San Joaquin Valley floor, and thus the study area, was occupied by these southern Valley Yokuts speakers, themselves divided into a series of autonomous “tribelets,” the boundaries of which are not well defined. The Yauelmani Yokuts lived from the Kern River area, in modern Bakersfield, to the southeast corner of the valley, on the Tejon Ranch, thus likely including the study area. The Hometwali were centered around Kern Lake, while the Tulamni occupied the west side of Buena Vista Lake and the foothills of the Temblors, at least to McKittrick. The Tuhohi resided from the Kern River delta north to the Goose Lake area and west to the sloughs near Buttonwillow. Yokuts villages apparently extended up to, but not into, the mouths of the canyons on the northern and western fronts of the Tehachapi Mountains, well into the foothills and lower elevations of the Sierra Nevada on the east, and to the crest of the Temblor Range on the west. The Yokuts are Penutian speakers and are linguistically related to northern occupants of the San Joaquin Valley.

The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

Most Yokuts groups, again regardless of specific tribal affiliation, were organized as a recognized and distinct tribelet; a circumstance that almost certainly pertained to the tribal groups noted above. Tribelets were land-owning groups organized around a central village and linked by shared territory and descent from a common ancestor. The population of most tribelets ranged from about 150 to 500 peoples (Kroeber 1925).

Each tribelet was headed by a chief who was assisted by a variety of assistants, the most

important of whom was the winatum, a herald or messenger and assistant chief. A shaman also served as religious officer. While shamans did not have any direct political authority, as Gayton (1930) has illustrated, they maintained substantial influence within their tribelet.

Shamanism is a religious system common to most Native American tribes. It involves a direct and personal relationship between the individual and the supernatural world enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed or more typically native tobacco). Shamans were considered individuals with an unusual degree of supernatural power, serving as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans also produced the rock art of this region, depicting the visions they experienced in vision quests believed to represent their spirit helpers and events in the supernatural realm (Whitley 1992, 2000).

The centrality of shamanism to the religious and spiritual life of the Yokuts was demonstrated by the role of shamans in the yearly ceremonial round. The ritual round performed the same each year, started in the spring with the jimsonweed ceremony, followed by rattlesnake dance and (where appropriate) first salmon ceremony. After returning from seed camps, fall rituals began in the late summer with the mourning ceremony, followed by first seed and acorn rites and then bear dance (Gayton 1930:379). In each case, shamans served as ceremonial officials responsible for specific dances involving a display of their supernatural powers (Kroeber 1925).

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California tribes, the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

3.2.3 Historic Setting

In California, the historic era is divided into three general periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present). The mission system, which ultimately established 21 missions between 1796 and 1822, consisted of missions, presidios, and pueblos, and was designed to convert the indigenous peoples of California to Christianity and assimilate them under Spanish rule (Gudde 1998).

The Spaniards were the first non-Indians to enter the San Joaquin Valley. Pedro Fages led a group of soldiers through Tejon Pass into the San Joaquin Valley in 1772 (Wallace 1978:459). In 1776, Spanish missionaries visited the area now known as Bakersfield; the event was documented by Franciscan friar Francisco Garcés. Father Garcés described the Kern River, which he named Rio de San Felipe, and visited the Yokuts community of Woilu, a village situated on the land modern Bakersfield would later occupy. While visiting Woilu, Father Garcés performed the first European baptism in the San Joaquin Valley. The Franciscans returned to their base at Mission San Gabriel following a route through the Tehachapi Mountains that functioned as the primary road until 1876, when the Southern Pacific Railroad created an alternate route.

Lieutenant Gabriel Moraga led a group of Spanish explorers into the San Joaquin Valley in 1806 (Clough and Secrest 1984:25–27). Moraga's party intended to locate new lands for missions, find and return runaway Indians, and relocate stolen livestock. Moraga is credited with naming both the Kings and San Joaquin rivers. By the early 1820s, the expansion of missions in California ceased as a result of Mexico's independence from Spain (Clough and Secrest 1984:26). In 1827, the 17-man expedition led by Jedediah Smith entered the region and signaled the earliest American presence in the Kern County area (Clark 1998). Smith's adventures included friendly encounters with the Southern Yokuts near the Kings River and trapping and camping along the San Joaquin River (Clough and Secrest 1984:27). After Smith's visit, other trappers followed until about 1837, by which time fur-bearing animals had been nearly exterminated from the valley.

In 1852 Tulare County was officially formed from parts of Mariposa County. 20 years later in 1872 Tulare was settled by the Southern Pacific Railroad to serve as its San Joaquin Valley headquarters. Unlike nearby Visalia that served primarily as a supply and agricultural center for the valley the City of Tulare's driving force was transportation. The early years were not easy for the city. Within the first14 years of its settlement Tulare burned down three times. Tulare was incorporated by 1888, and just 3 years later faced a new hardship in the form of the Southern Pacific Railroad relocating its valley headquarters to Bakersfield. It was after this shift in the city's economy that residents turned to agriculture for their livelihood. Faced with the new challenge of providing enough water to supply the new industry residence founded the Tulare Irrigation District and issued $500,000 in bonds to construct an extensive canal system to carry water from the Sierra Nevada Mountains. In 1903 the town celebrated paying off the bonds with a bond-burning celebration. Today agriculture remains the lifeblood of the local economy with Tulare sitting in the heart of some of the most productive farmland in the region (City of Tulare 2023).

4.0 ARCHIVAL RECORDS SEARCH

4.1 Southern San Joaquin Valley Information Center

The Project area is located in the USGS Tulare 7.5' Series Quadrangle (USGS 2021). On December 5, 2023, Soar submitted a records search request to the Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield (Appendix

A). The records search included a 0.5-mile buffer around the Project area. The results from the records search indicate two (2) cultural resource studies have been conducted within the Project area (Table 1), with one (1) negative result cultural resource study outside the far south-west edge of the Project area; TU-00458 (Table 2). According to the information on file, there are no resources within the Project area.

Table 1. Survey Reports within the Project area

Report No.	Year	Author(s)/ Affiliation	Title
TU-00041	1995	Self, William / William Self Associates	Class I Overview, Santa Fe Pacific Pipeline Partners, L.P., Proposed Concord to Colton Pipeline Project
TU-01190	1957	Mitchell, Annie R. / Westernlore Press	Jim Savage and the Tulareño Indians

There were four (4) reports identified within a 0.5-mile radius of the Project area (Table 2). There are two (2) recorded resources within the 0.5-mile record search radius (Table 3).

Table 2. Survey Reports within 0.5 Mile of the Project area

Report No.	Year	Author(s)/ Affiliation	Title
TU-00458	1987	Schiffman, Robert A./ Bakersfield College	Archaeological Investigation for Ranch Acres No. 2, Tulare County, California
TU-01498	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelsen, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill / Far Western Anthropological Research Group, Inc.	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties.
TU-01939	2021	Hudlow, Scott M. / Hudlow Cultural Resource Associates	A Phase I Cultural Resource Survey for Derrell's Mini Storage, N. Mooney Boulevard, City of Tulare, California
TU-01956	2020	Sauls, Consuelo Y./ Taylored Archaeology	Cultural Resources Assessment for the KCOK Phase 9 Tentative Subdivision Project, City of Tulare, Tulare County, California

Table 3. Resources within 0.5 Mile of the Project area

Primary #	Type	Description
P-54-004632	Structure, Object, Site	Atchison, Topeka, Santa Fe Railroad Branch Line; AH04; AH07; HP19; HP37
P-54-005296	Structure	Tulare Irrigation District Canal; AH06; HP20

There are no recorded cultural resources within the Project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

4.2 Sacred Lands File & Native American Contacts List Request

The California Native American Heritage Commission (NAHC) was contacted on December 5, 2023, to conduct a Sacred Lands File (SLF) search, and to obtain a list of tribes culturally and geographically affiliated with the Project area (Appendix B). On January 2, 2024, the NAHC indicated there are no Native American traditional cultural places or sacred sites within or near the Project area. The NAHC provided a list of five (5) Tulare County Native American groups and individuals affiliated with the local tribes. On January 2, 2024 Ms. Froshour sent letters to all individuals describing the location, and the nature of the project. In each letter, Ms. Froshour included a request for information regarding prehistoric, historic, ethnographic land use, as well as contemporary Native American values.

Soar Environmental did not receive comments from the Tulare County Native American groups or affiliated individuals regarding the proposed development at the project location.

4.3 Historic Aerial Image Review

Review of the historic aerial imagery reveals structures in the southwest corner project area as early as 1956, with the rest of the Project area being used for agricultural crops. Roadways running along the north and west edges of the project area are also visible at this time. By the 1984 historic aerial these structures were mostly removed from the area, with only one structure still visible. The 1994 aerial shows the area of what is now an agricultural equipment storage area present. Topographic (topo) maps of the project area show waterways and roadways present in the earliest cataloged maps from 1925. In this map two structures are depicted on the east side of Morrison Street on the west edge of the Project area. By 1942 three structures were present in this area, with a fourth in the northeast section off Prosperity Avenue. Between 1951 and 1963 the alignment of the Tulare Colony Ditch shifted from north-south within the Project area to an east-west alignment, following Oakmore Rd in the upper north section of the Project area. In 1971 only two structures and a warehouse/barn were present in the southwest, with the structure in the north no longer depicted. By 2012 no structures are depicted on topo maps within the Project area. Between 2018 and 2021 that this segment of the ditch shifted to follow an

underground path once more on APN 184-020-010 from the parcel east boundary up to Prosperity Avenue (Nationwide Environmental Title Research, LLC 2020).

5.0 PREVIOUS DISTURBANCES IN THE PROJECT AREA

The Project area is located within an area that has undergone anthropogenic modifications, primarily from activities related to residential uses and agricultural activities. Likewise, the surface of the Project area has undergone surface grading and intense subsurface disturbance from previous residential construction and agricultural plowing. In some cases, the graded surface could exceed 24 inches (60 centimeters). This disturbance could exceed 3 feet (0.914 meters) in some areas.

In summary, the following previous disturbances have occurred within or immediately adjacent to the Project area:

- Surface grading and maintenance of current and historic roads
- Subsurface plowing, tilling, and harvesting due to agricultural activities
- Surface grading and subsurface disturbance for main building, outbuilding construction.

6.0 FIELD SURVEY METHODS AND RESULTS

The basic criteria for determining the presence of prehistoric and historic cultural resources in local urban and rural settings generally includes:

- Presence of flaking debris derived from stone tool manufacturing
- Presence of marine shell and/or other faunal remains
- Occurrence of material culture artifacts
- Surface expressions of cultural features
- Bedrock mortars and related milling features/components
- Soil discolorations or atypical soil manifestations
- Stone/adobe features associated with structural remains
- Diagnostic ceramics derived from Spanish, Mexican, or later periods
- Historic iron and glassware, cans, privy pits, domestic occupational debris

This investigation included the following tasks:

- Review of regional history and previous cultural resource sites and studies within the Project area and the vicinity.
- Examination of archival topographic maps and aerial photographs for the Project area and the general vicinity.
- Request of a California Historical Resources Information System data request of the Project area and 0.50-mile radius through the Southern San Joaquin Valley Information Center.
- Request of a NAHC Sacred Lands File Search for the Project area and 0.50-mile radius. Contact with Tribal groups and individuals as named by the NAHC.
- Evaluate the potential for the proposed Project to result in significant impacts to cultural resources including the potential to impact buried cultural resources with no surface expression.
- Intensive Phase 1 pedestrian survey with transect intervals of 50 feet (15 meters) of the Project area.
- Develop recommendations associated with impacts to cultural resources following the guidelines as outlined in the Regulatory Setting.

Ms. Froshour conducted the field survey of the Project area with the aid of Mr. Studley and Ms. Hawley on December 16, 2023. The Project area was examined by systematic pedestrian inspection of the ground surface. Transect intervals varied from 50 feet (15 meters). Surface bioturbation (rodent burrows) was also examined within the Project area. Disturbances immediately adjacent to the Project area were also examined for primary and secondary surface archaeological indicators.

The approximately 140.32-acre Project area consists mostly of undeveloped agricultural fields (Figures 6-18). Irrigation ditches, dirt roads, and contemporary irrigation features (e.g., standing pipes, culverts, pumps) exist within the Project footprint. The Project area consists of 74-acres of fallow millet-rice fields, 60-acres of potted blueberries, 0.5-acre pump station stockpond with southern cattail, 3-acres farm equipment storage area, and 2.82-acres of unpaved dirt roads throughout the Project area. The surface visibility of the Project area, defined as the approximate percentage of native soils visible during field survey of a given project component, was estimated at 90-100% within the dirt roads, open fallow field, and agricultural equipment storage areas within the Project area. The surface visibility of the potted blueberries and pump station stockpond was estimated at 0-10%.

In summary, no *in situ* cultural resources, or isolate materials potentially derived from a primary or secondary archaeological contexts, were observed on the surface of the Project area.

7.0 RECOMMENDED ACTIONS AND MITIGATION MEASURES

There appears to be a low possibility for subsurface cultural resources in the Project area, based on the results of the archival research, and the fact that no known resource have been detected during previous disturbances within the Project area. There are no recorded cultural resources within the 0.5-mile buffer radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks. No site testing or mitigation measures are recommended or required, unless previously undiscovered cultural resources are detected during construction.

The intensive Phase I pedestrian survey was conducted on December 16, 2023, with parallel transects spaced at 50 feet (15-meter) intervals walked across the entire Project area. No other cultural resources of any kind were identified during a Phase I study of the Project area. The proposed 4 Creeks Lagomarsino Housing Subdivision Project therefore does not have the potential to result in adverse impacts to know historical properties.

A potential always exists to encounter previously undetected cultural resources. If cultural materials (prehistoric and/or historic artifacts) are detected during the course of ground disturbances associated with this project, all work in the immediate area of the find shall be halted until a qualified archaeologist can inventory and assess the significance of the find(s). At that point, the resources shall be evaluated in accordance with the procedures set forth in the California Environmental Quality Act (CEQA) 21083.2, sections 15064.5 and 15126.4, and the criteria regarding resource eligibility to the California Register of Historic Resources (CRHR).

If a resource cannot be avoided, then the resource must be examined vis-à-vis the provisions in the County Guidelines, and CEQA Sections 15064.5 and 15126.4 and the eligibility criteria as an “important” or “unique archaeological resource,” as appropriate. In many cases, determination of a resource’s eligibility can only be made through extensive research and archaeological testing.

Human remains are addressed by State of California Health and Safety Code Section 7050.5. This code section states that no further disturbance shall occur until the County Coroner has made a determination of the origin and disposition of the remains, pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric/ethnohistoric Native American remains, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 24 hours of notification, and may potentially recommend scientific removal, reburial, nondestructive analysis of human remains, and/or specific treatment of associated burial goods.

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FIGURES

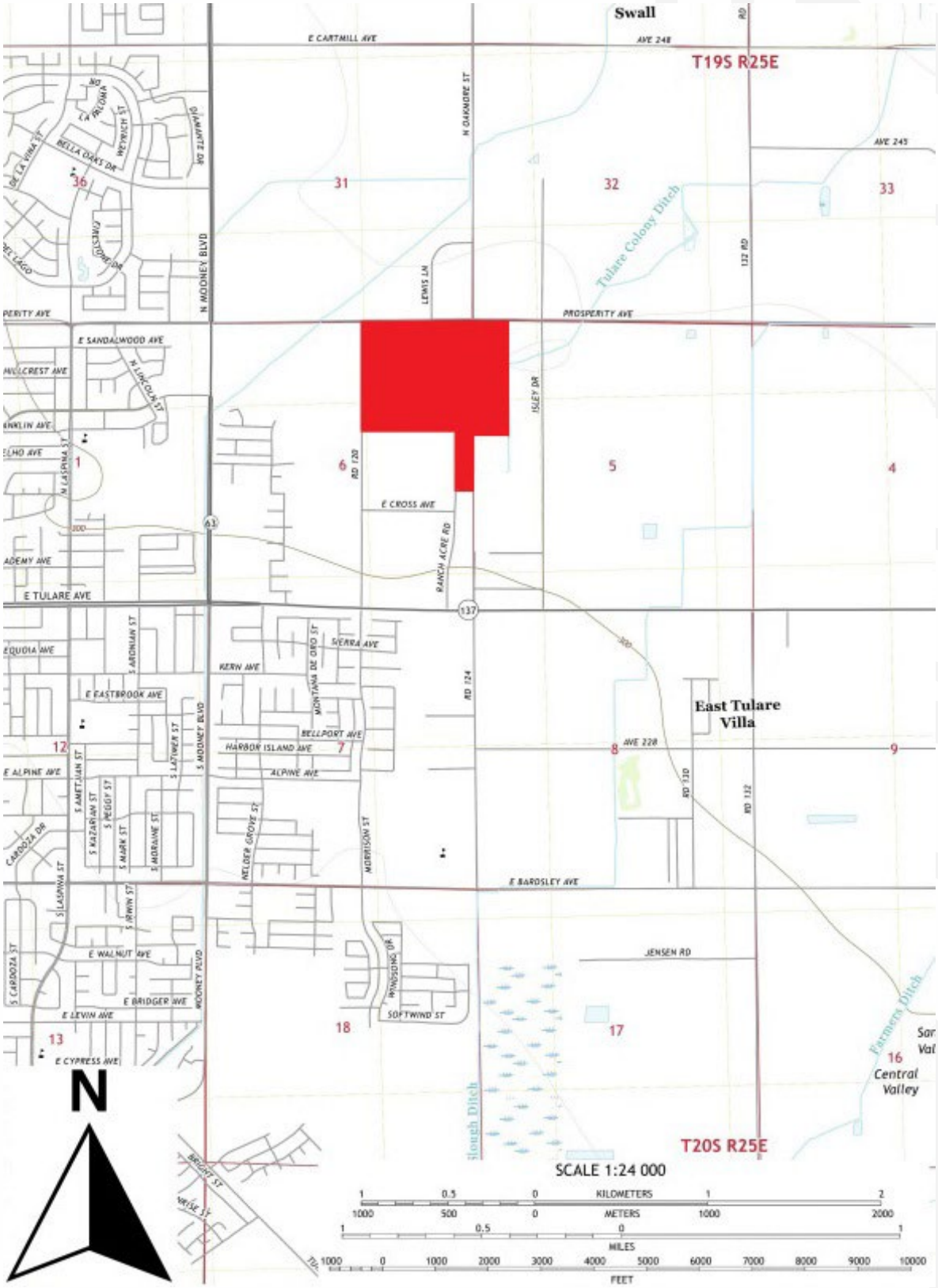


Figure 1— Project Location, adapted from USGA 7.5' series Tulare, California, 2021

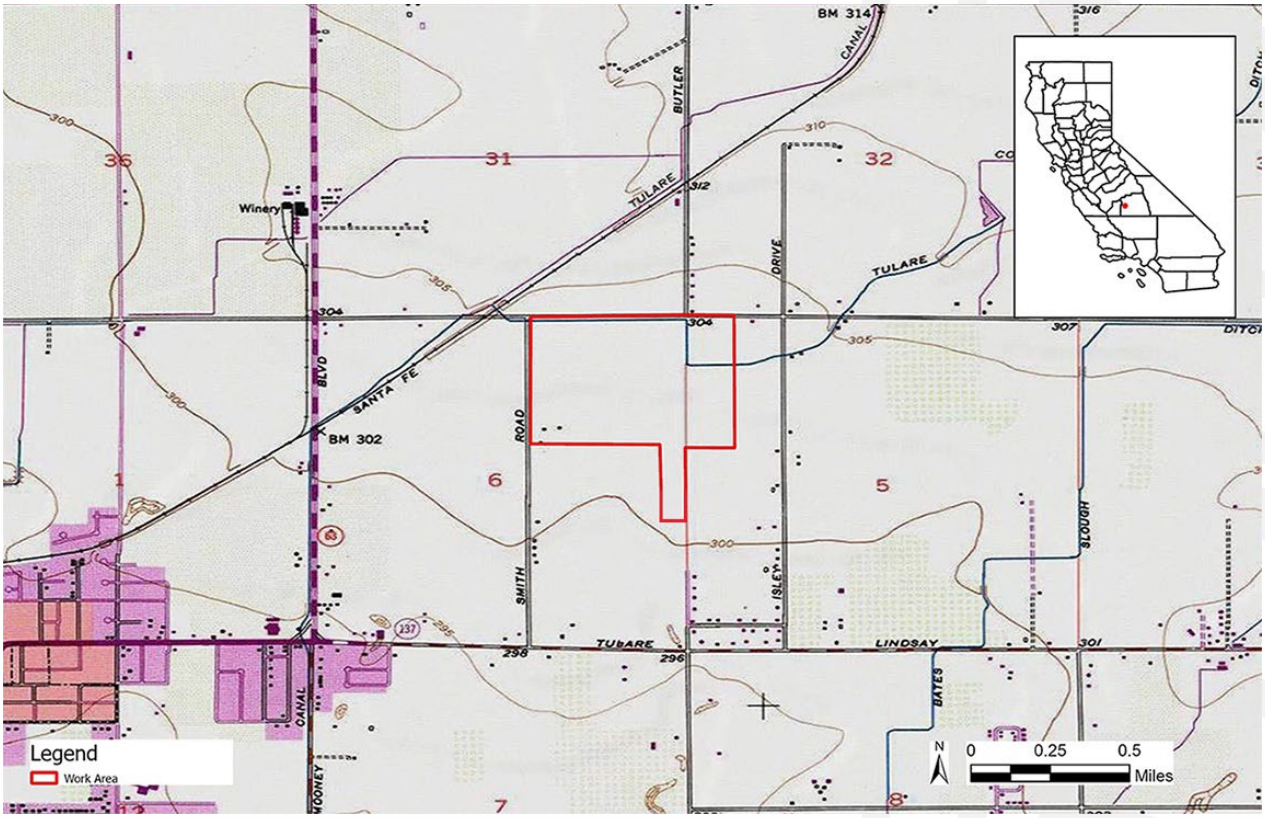


Figure 2— Project Vicinity Map

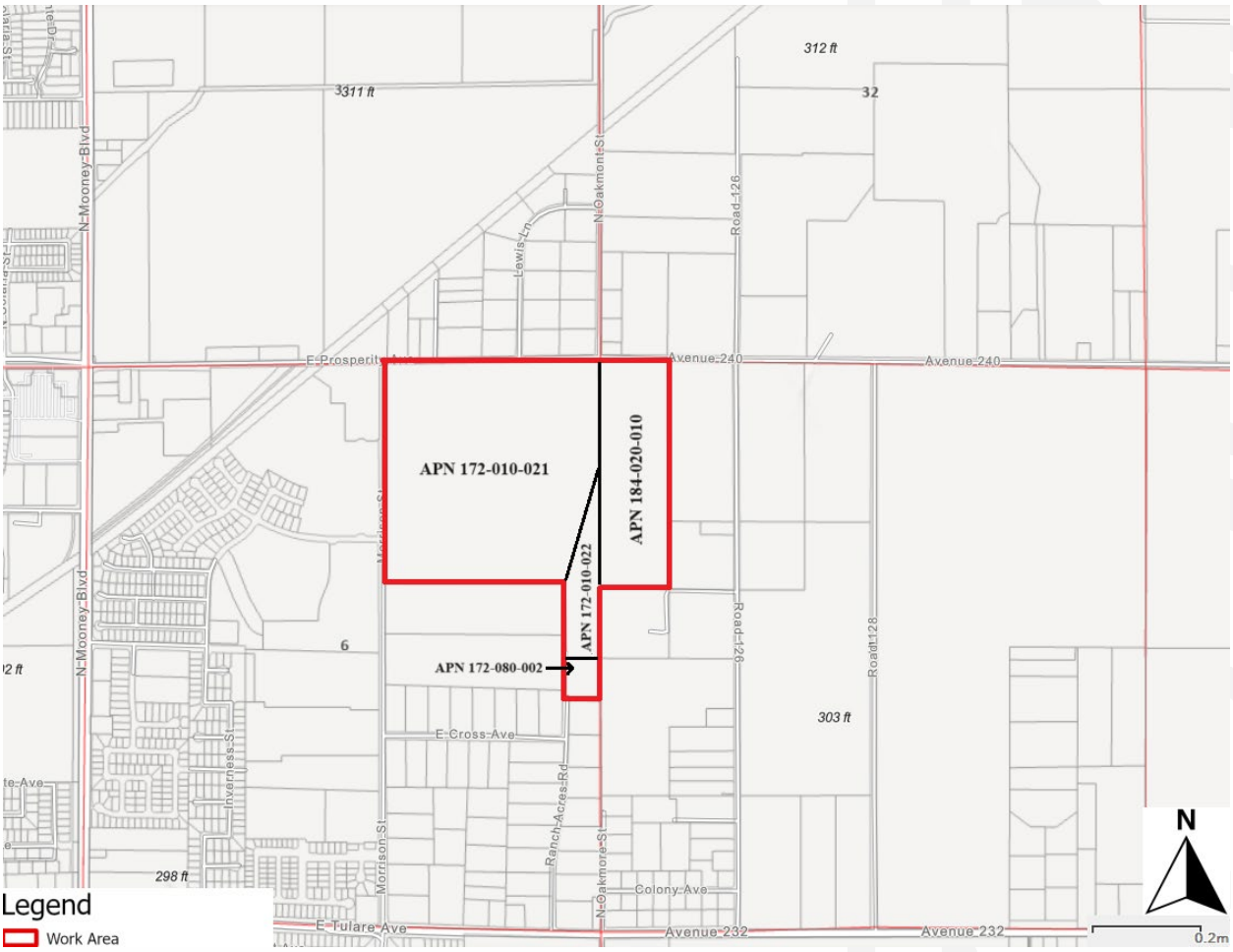
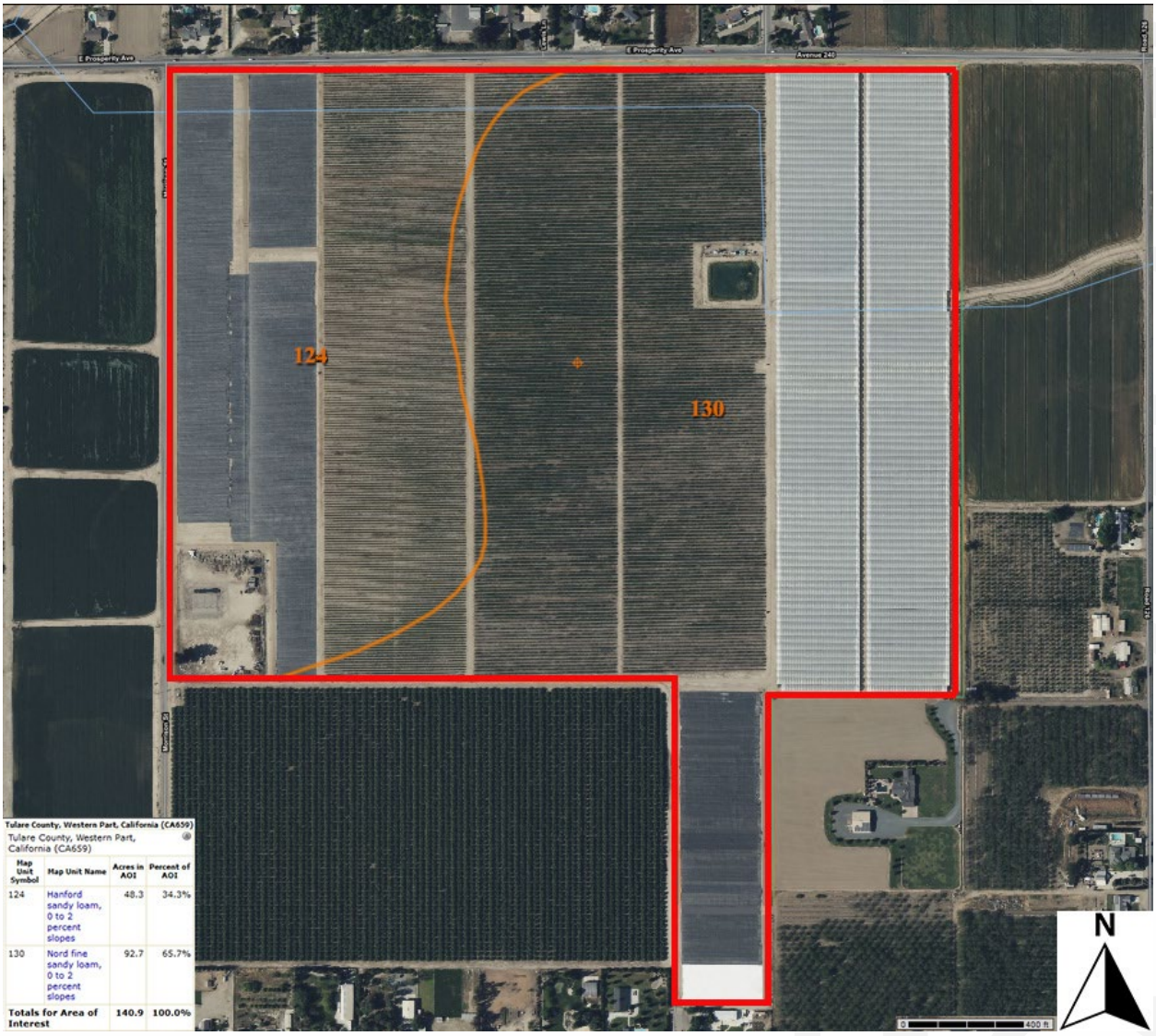


Figure 3—Assessor Parcel Map

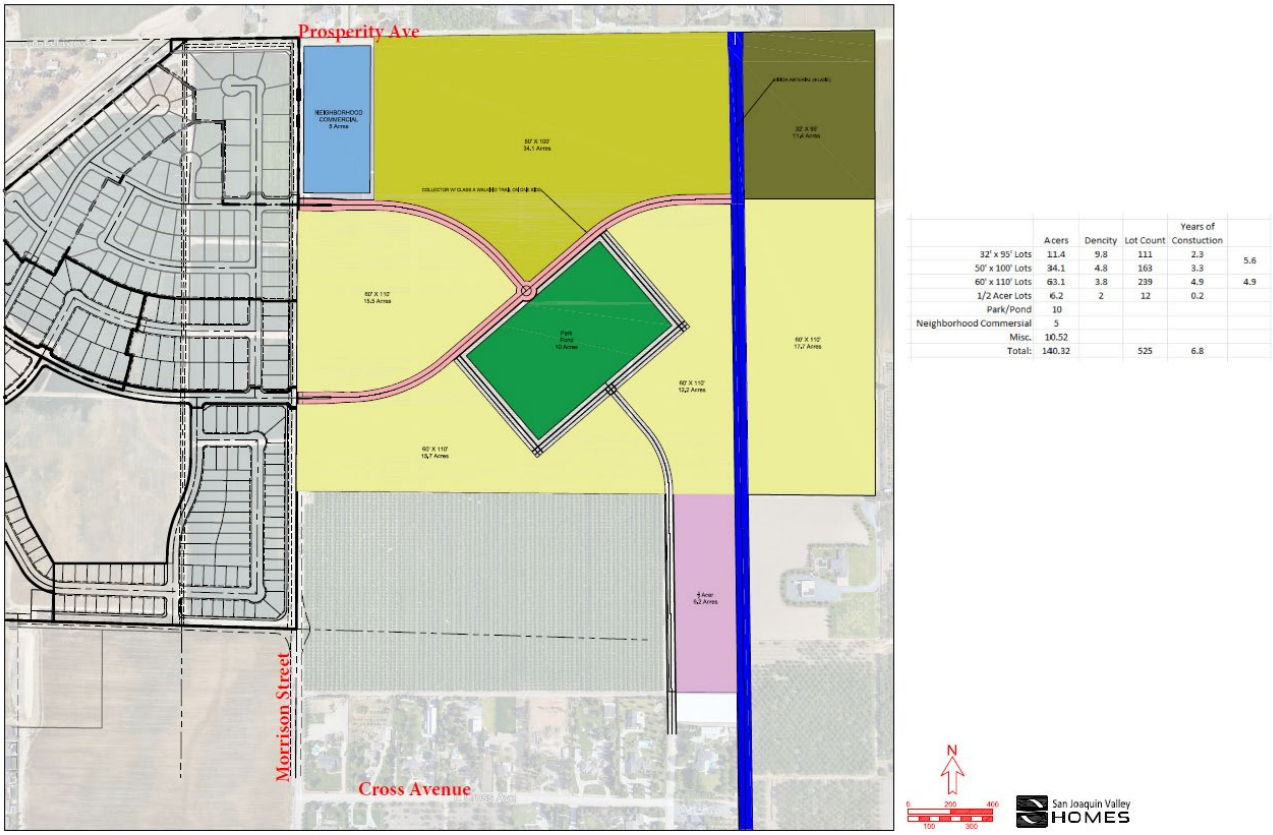


Tulare County, Western Part, California (CA659)

Tulare County, Western Part, California (CA659)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
124	Hanford sandy loam, 0 to 2 percent slopes	48.3	34.3%
130	Nord fine sandy loam, 0 to 2 percent slopes	92.7	65.7%
Totals for Area of Interest		140.9	100.0%

Figure 4— Soil Types Occurring in the Project area



	Acers	Dencity	Lot Count	Years of Constuction	
32' x 95' Lots	11.4	9.8	111	2.3	
50' x 100' Lots	34.1	4.8	163	3.3	5.6
60' x 110' Lots	63.1	3.8	239	4.9	4.9
1/2 Acer Lots	6.2	2	12	0.2	
Park/Pond	10				
Neighborhood Commersial	5				
Misc.	10.52				
Total:	140.32		525	6.8	

Figure 5— Lagomarsino Property Land Use Exhibit Map



Figure 6— Overview from north northeast corner of Project area, facing southeast



Figure 7— Overview from northeast corner of Project area, facing southwest



Figure 8— Overview from northwest corner of parcel 172-010-022, facing southeast



Figure 9— Overview from north end of Oakmore Rd, facing south



Figure 10— Overview from southeast corner showing blueberry pots, facing north



Figure 11— Overview from southeast corner of Project area, facing northwest



Figure 12— Overview from southwest corner of Project area, facing northeast



Figure 13— Overview from south edge of fenced pump station stockpond, facing east



Figure 14— Overview from southwest corner of Project area, facing northeast



Figure 15— Overview from west edge of Project area, facing east



Figure 16— Overview from center of Project area, facing north



Figure 17— Overview from center of Project area, facing west



Figure 18— Overview from center of Project area, facing east

APPENDIX A

Southern San Joaquin Valley Information Center Records Search

Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
www.soarhere.com • 559.547.8884

Cultural Resources Records Search Request

Tuesday, December 5, 2023

Southern San Joaquin Valley Information Center
California State University Bakersfield
Mail Stop: 72DOB
9001 Stockdale Highway
Bakersfield, CA 93311-1022
Tel: 661.654.2289
ssjvic@csub.edu

RE: Phase I CEQA Cultural Resource Assessment Report for proposed housing development bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-080-002, 172-010-021, 172-010-022, & 184-020-010.

Dear Celeste,

Please find attached one project location map, shapefiles, and the SSJVIC/CHRIS Data Request Form for the proposed housing development project in Tulare, CA.. The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

Please conduct a normal rate records search, including no more than a 0.50-mile radius buffer, of the project location illustrated on the attached map. Please provide the following information:

- PDF of all site records and associated survey reports (Note: PDF/photocopy only those site reports that appear to be pertinent to the immediate project location and search area; surveys and other site/resources can be listed, with full reports requested later if necessary).
- A list of all previous sites and surveys within the search area.
- A confirmation of any sites, structures, or linear features on local, state, and/or federal registers/lists in the project location or the 0.50-mile search area that are not yet mapped on the GIS.

If the normal records search costs will exceed $500.00, or if you have any questions or comments, please e-mail me at hfroshour@soarhere.com. Please contact me as soon as possible if there will be any delays with the records search, as the client may request an expedited search. Please email the encrypted search results in PDF format to: hfroshour@soarhere.com.

Many thanks in advance for your assistance with this project.

Most Sincerely,



Heather Froshour, M.A., R.P.A.
Sr. Archaeologist
Soar Environmental Consulting, Inc.
207.232.8912

California Historical Resources Information System

CHRIS Data Request Form

ACCESS AND USE AGREEMENT NO.: 515.00 **IC FILE NO.:** _____

To: Southern San Joaquin Valley Information Center

Print Name: Heather Froshour Date: 12/05/2023

Affiliation: Soar Environmental Consulting Inc.

Address: 1322 East Shaw Ave. Suite 400

City: Fresno State: CA Zip: 93710

Phone: (559) 547-8884 Fax: _____ Email: hfroshour@soarhere.com

Billing Address (if different than above): _____

Billing Email: cdavis@soarhere.com Billing Phone: _____

Project Name / Reference: Phase I Cultural Resources Assessment Report Lagomarsino

Project Street Address: APNs 172-080-002, 172-010-021, 172-010-022, & 184-020-010

County or Counties: Tulare

Township/Range/UTMs: T 20S, R 25E, S 5 & 6; WGS 84 11N 293417E 4011151N

USGS 7.5' Quad(s): Tulare (2021), USGS 7.5' Series Quadrangle

PRIORITY RESPONSE (Additional Fee): yes ☐ / no ■

TOTAL FEE NOT TO EXCEED: $ 500.00
(If blank, the Information Center will contact you if the fee is expected to exceed $1,000.00)

Special Instructions:

Information Center Use Only

Date of CHRIS Data Provided for this Request: _____

Confidential Data Included in Response: yes ☐ / no ☐

Notes: _____

CHRIS Data Request Form

Mark the request form as needed. Attach a PDF of your project area (with the radius if applicable) mapped on a 7.5' USGS topographic quadrangle to scale 1:24000 ratio 1:1 neither enlarged nor reduced and include a shapefile of your project area, if available. Shapefiles are the current CHRIS standard for submitting digital spatial data for your project area or radius. **Check with the appropriate IC for current availability of digital data products.**

- Documents will be provided in PDF format. Paper copies will only be provided if PDFs are not available at the time of the request or under specially arranged circumstances.
- Location information will be provided as a digital map product (Custom Maps or GIS data) unless the area has not yet been digitized. In such circumstances, the IC may provide hand drawn maps.
- In addition to the $150/hr. staff time fee, client will be charged the Custom Map fee when GIS is required to complete the request [e.g., a map printout or map image/PDF is requested and no GIS Data is requested, or an electronic product is requested (derived from GIS data) but no mapping is requested].

For product fees, see the CHRIS IC Fee Structure on the OHP website.

1. Map Format Choice:

Select One: Custom GIS Maps ☒ GIS Data ☐ Custom GIS Maps **and** GIS Data ☐ No Maps ☐

Any selection below left unmarked will be considered a "no. "

Location Information:

	Within project area	Within 0.5 mi. radius
ARCHAEOLOGICAL Resource Locations[1]	yes ☒ / no ☐	yes ☒ / no ☐
NON-ARCHAEOLOGICAL Resource Locations	yes ☒ / no ☐	yes ☒ / no ☐
Report Locations[1]	yes ☒ / no ☐	yes ☒ / no ☐
"Other" Report Locations[2]	yes ☒ / no ☐	yes ☒ / no ☐

3. Database Information:
(contact the IC for product examples, or visit the SSJVIC website for examples)

	Within project area	Within 0.5 mi. radius
ARCHAEOLOGICAL Resource Database[1]		
List (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Detail (PDF format)	yes ☐ / no ☒	yes ☐ / no ☒
Excel Spreadsheet	yes ☐ / no ☒	yes ☐ / no ☒
NON-ARCHAEOLOGICAL Resource Database		
List (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Detail (PDF format)	yes ☐ / no ☒	yes ☐ / no ☒
Excel Spreadsheet	yes ☐ / no ☒	yes ☐ / no ☒
Report Database[1]		
List (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Detail (PDF format)	yes ☐ / no ☒	yes ☐ / no ☒
Excel Spreadsheet	yes ☐ / no ☒	yes ☐ / no ☒
Include "Other" Reports [2]	yes ☒ / no ☐	yes ☒ / no ☐

4. Document PDFs (paper copy only upon request)**:**

	Within project area	Within 0.5 mi. radius
ARCHAEOLOGICAL Resource Records[1]	yes ☒ / no ☐	yes ☒ / no ☐
NON-ARCHAEOLOGICAL Resource Records	yes ☒ / no ☐	yes ☒ / no ☐
Reports[1]	yes ☒ / no ☐	yes ☒ / no ☐
"Other" Reports[2]	yes ☒ / no ☐	yes ☒ / no ☐

CHRIS Data Request Form

5. Eligibility Listings and Documentation:

	Within project area	Within 0.5 mi. radius
OHP Built Environment Resources Directory[3]:		
Directory listing only (Excel format)	yes ☒ / no ☐	yes ☒ / no ☐
Associated documentation[4]	yes ☒ / no ☐	yes ☒ / no ☐
OHP Archaeological Resources Directory[1,5]:		
Directory listing only (Excel format)	yes ☒ / no ☐	yes ☒ / no ☐
Associated documentation[4]	yes ☒ / no ☐	yes ☒ / no ☐
***California Inventory of Historic Resources* (1976):**		
Directory listing only (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Associated documentation[4]	yes ☒ / no ☐	yes ☒ / no ☐

6. Additional Information:

The following sources of information may be available through the Information Center. However, several of these sources are now available on the OHP website and can be accessed directly. The Office of Historic Preservation makes no guarantees about the availability, completeness, or accuracy of the information provided through these sources. Indicate below if the Information Center should review and provide documentation (if available) of any of the following sources as part of this request.

Caltrans Bridge Survey	yes ☒ / no ☐
Ethnographic Information	yes ☒ / no ☐
Historical Literature	yes ☒ / no ☐
Historical Maps	yes ☒ / no ☐
Local Inventories	yes ☒ / no ☐
GLO and/or Rancho Plat Maps	yes ☒ / no ☐
Shipwreck Inventory	yes ☐ / no ☒
Soil Survey Maps	yes ☒ / no ☐

---

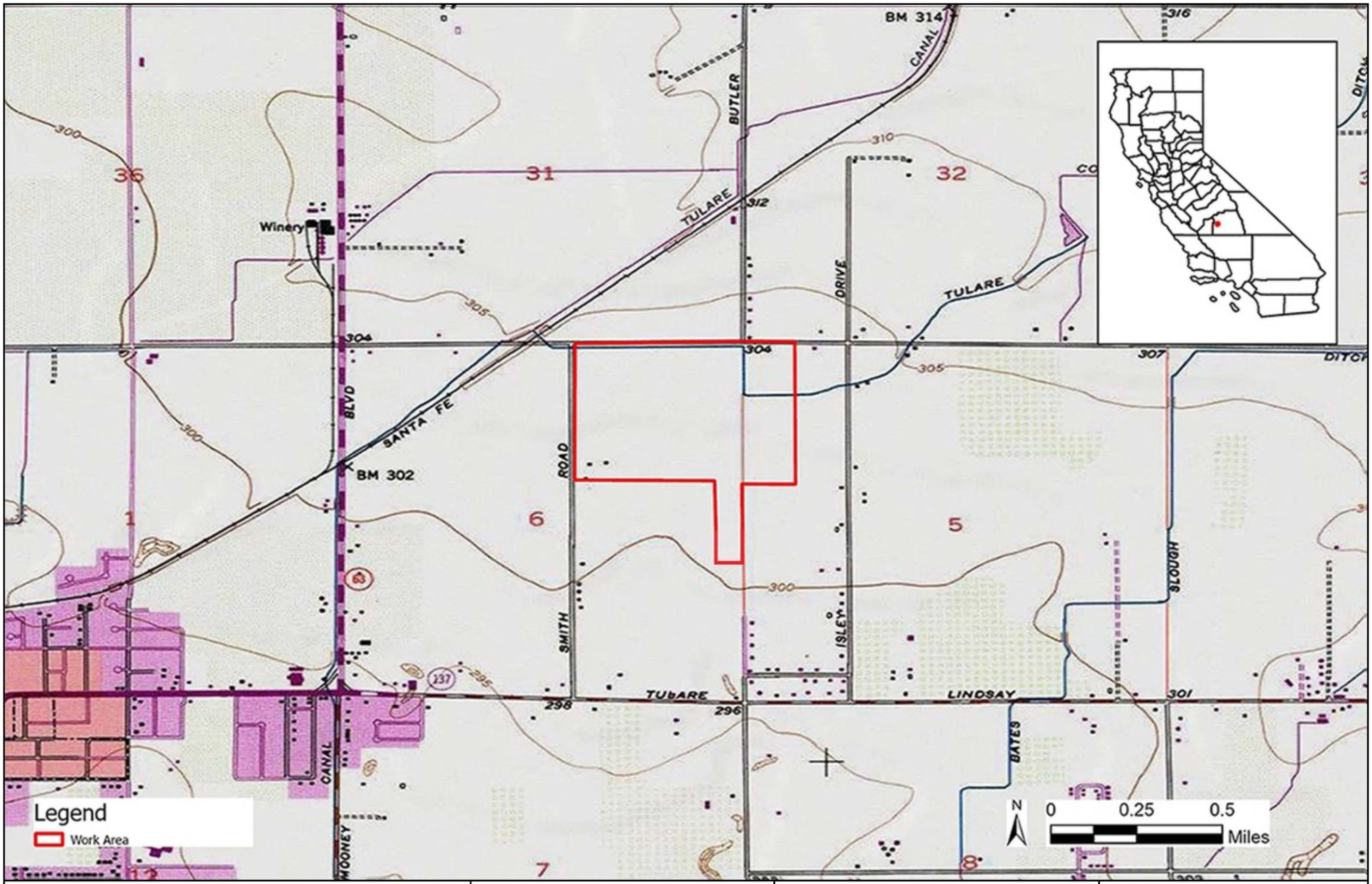
[1] In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under an active CHRIS Access and Use Agreement.

[2] "Other" Reports GIS layer consists of report study areas for which the report content is almost entirely non-fieldwork related (e.g., local/regional history, or overview) and/or for which the presentation of the study area boundary may or may not add value to a record search.

[3] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Includes, but not limited to, information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys. Previously known as the HRI and then as the HPD, it is now known as the Built Environment Resources Directory (BERD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

[4] Associated documentation will vary by resource. Contact the IC for further details.

[5] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Previously known as the Archaeological Determinations of Eligibility, now it is known as the Archaeological Resources Directory (ARD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.



SOAR ENVIRONMENTAL CONSULTING 1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884	Title Project Location Client 4Creeks	Facility Address Subdivision bounded by Morrison and Prosperity in the City of Tulare.	Figure # 1 Project Location Revision Date 12/05/2023

California Historical Resources Information System



Fresno
Kern
Kings
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Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

12/18/2023

Heather Froshour
Soar Environmental Consulting
1322 East Shaw Ave., Suite 400
Fresno, CA 93710

Re: Phase I Cultural Resources Assessment Report Lagomarsino
Records Search File No.: 23-495

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Tulare USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ GIS data

Resources within project area:	None
Resources within 0.5 mile radius:	P-54-004632, 005296
Reports within project area:	TU-00041, 01190
Reports within 0.5 mile radius:	TU-00458, 01498, 01939, 01956

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☒ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see https://www.slc.ca.gov/shipwrecks/

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Jeremy E David
Assistant Coordinator

Report List

SSJVIC Record Search 23-495

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
TU-00041	BLM - Permit No. CA-95-01-0004; NADB-R - 1141258	1995	Self, William	Class I Overview, Santa Fe Pacific Pipeline Partners, L.P., Proposed Concord to Colton Pipeline Project	William Self Associates	
TU-00458		1987	Schiffman, Robert A.	Archaeological Investigation for Ranch Acres No. 2, Tulare County, California	Bakersfield College	
TU-01190		1957	Mitchell, Annie R.	Jim Savage and the Tulareño Indians	Westernlore Press	
TU-01498	Submitter - Contract No. 06A1106; Submitter - Expenditure Authorization No. 06-0A7408	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelsen, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties.	Far Western Anthropological Research Group, Inc.	54-000580, 54-001091, 54-001479, 54-004595, 54-004611, 54-004614, 54-004619, 54-004629, 54-004630
TU-01939		2021	Hudlow, Scott M.	A Phase I Cultural Rseource Survey for Derrell's Mini Storage, N. Mooney Boulevard, City of Tulare, California	Hudlow Cultural Resource Associates	
TU-01956		2020	Sauls, Consuelo Y.	Cultural Resources Assessment for the KCOK Phase 9 Tentative Subdivision Project, City of Tulare, Tulare County, California	Taylored Archaeology	

Resource List

SSJVIC Record Search 23-495

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-54-004632	CA-TUL-002885H	Other - JTU-204; Resource Name - Atchison, Topeka, Santa Fe Railroad Branch Line; Other - Historic Railroad Segment; Resource Name - Santa Fe Railroad Grade	Structure, Object, Site	Historic	AH04; AH07; HP19; HP37	1995 (Carrie D. Wills, Allen Estes, William Self Associates); 2001 (S. Ashkar, C. Fish, Jones & Stokes); 2007 (M. Armstrong, R. Ottenhoff, P. Paramoure, L. MacDonald, Pacific Legacy, Inc.); 2009 (Steven J. Melvin, Rebecca Flores, JRP Historical Consulting, LLC.); 2012 (M. O'Neill, M. Walton, Pacific Legacy, Inc.); 2019 (Denise Ruzicka, CAL FIRE); 2019 (Robert Azpitarte, ASM Affiliates, Inc.)	TU-01889, TU-01929
P-54-005296	CA-TUL-003103H	Resource Name - Tulare Irrigation District Canal; Resource Name - CWA20-221-1; SB-97-H1; SB-97-H2; SB-97-H3; Resource Name - Old 99 Ditch of the Tulare Irrigation District; Resource Name - North Branch of the Kaweah Canal; Resource Name - Main Canal, Section 29	Structure	Historic	AH06; HP20	1997 (Emily Anderson, David Livingstone, KEA Environment); 1997 (Emily Adnerson, David Livingstone, KEA Environment); 1997 (Emily Anderson, David Livingstone, KEA Environment); 2007 (Matthew Armstrong, Randy Ottenhoff, Pacific Legacy, Inc.); 2009 (Rebecca S. Orfila, RSO Consulting); 2016 (Alberto Foglia and Annemarie Cox, PanGIS, Inc.); 2017 (Randy Baloian, Applied EarthWorks, Inc); 2022 (Karana Hattersley-Drayton, Taylored Archaeology)	TU-01837, TU-01936

California Historical Resources Information System



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Southern San Joaquin Valley Information Center
California State University, Bakersfield
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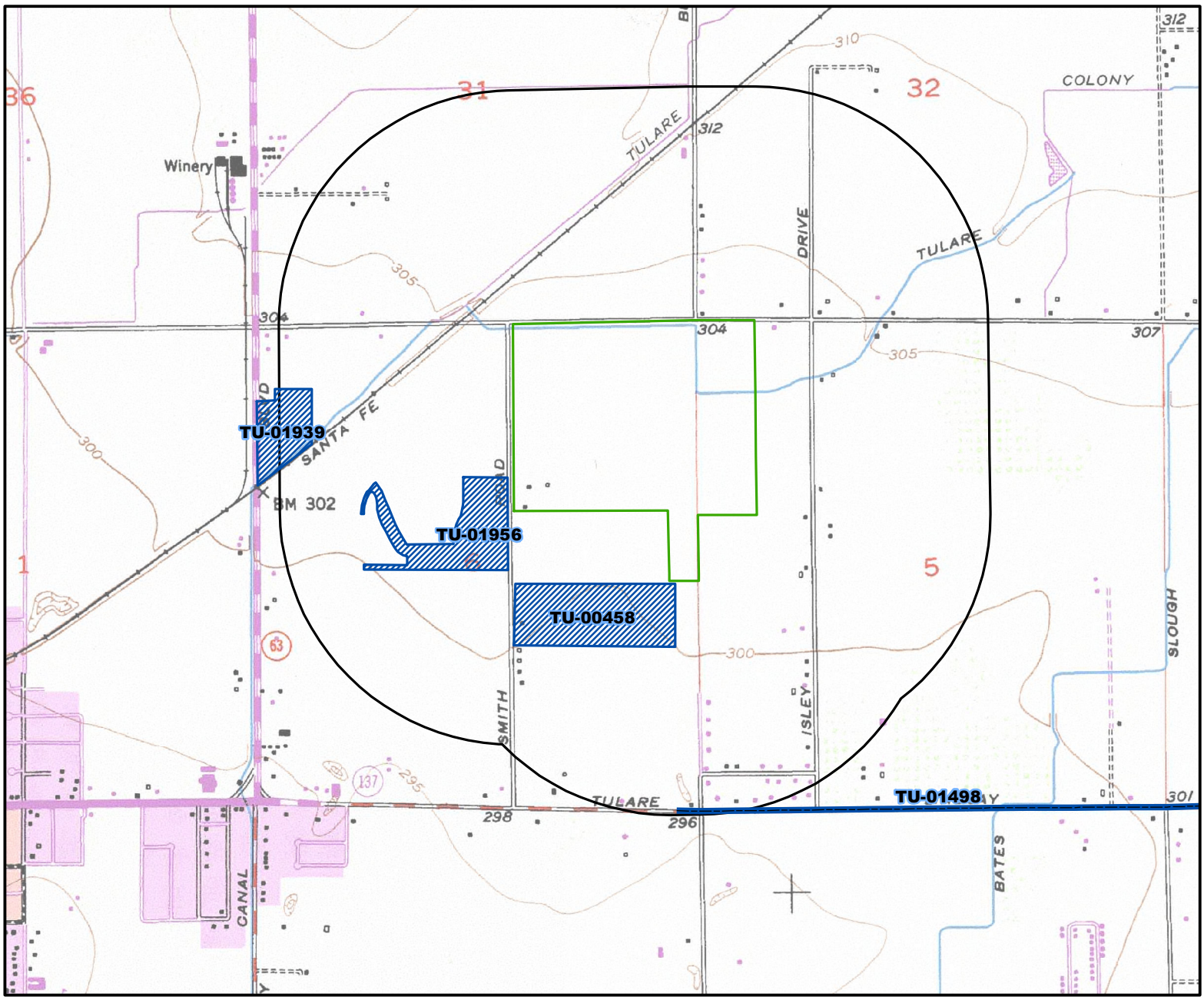
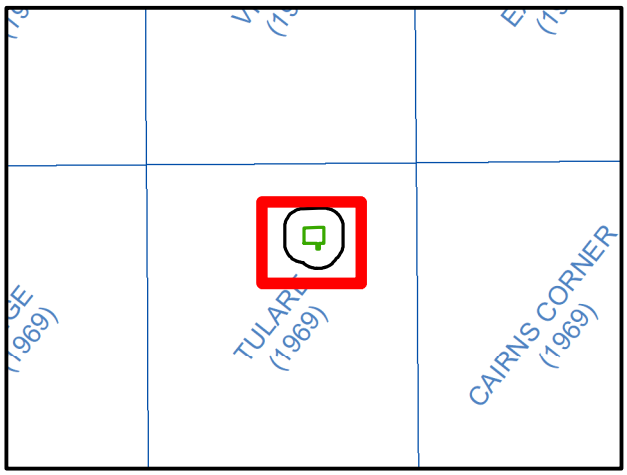
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic





May depict confidential cultural resource locations. Do not distribute.

Map pages depicting no data have been excluded.

Project Area

Record Search radius

N
W E
S

0 0.1 0.2 0.4 Miles

0 0.125 0.25 0.5 Kilometers

Reports Map
SSJV Information Center Record Search 23-495
Requester: Heather Froshour; Soar Environmental Consulting, Inc.
Project Name: Phase I Cultural Resources Assessment Report Lagomarsino
USGS 7.5' Quad(s): Tulare
County: Tulare

California Historical Resources Information System

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Southern San Joaquin Valley Information Center
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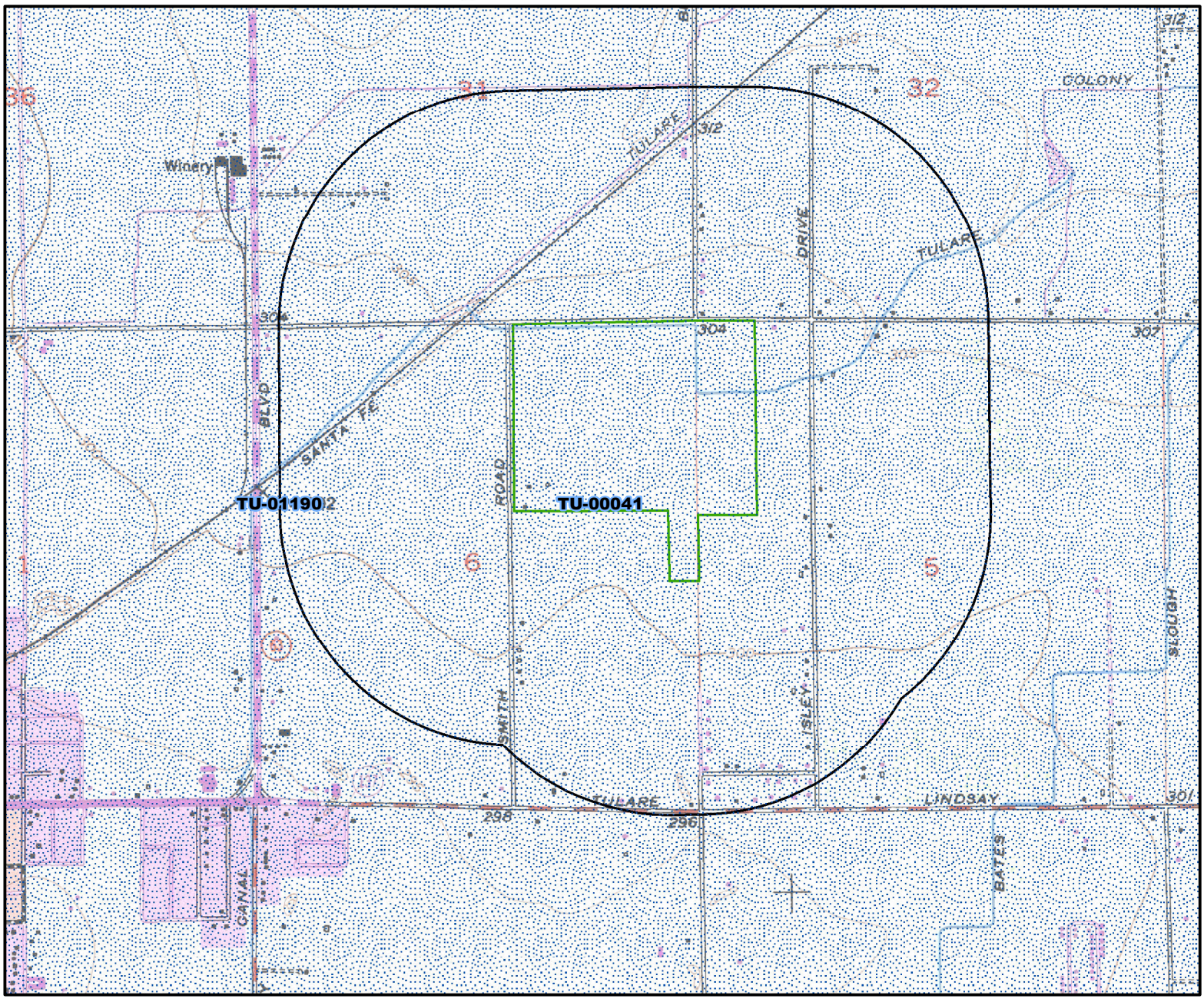

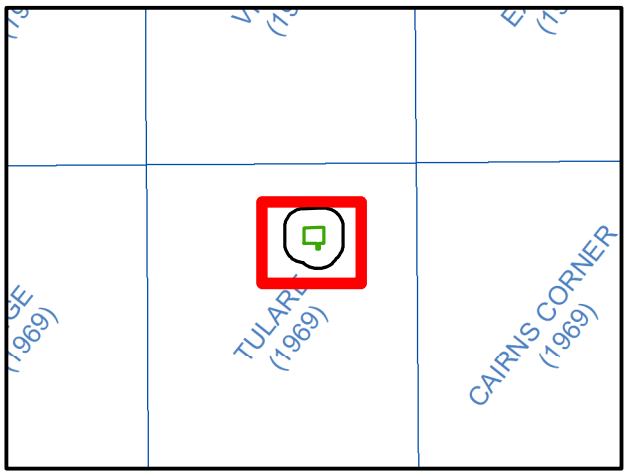

May depict confidential cultural resource locations. Do not distribute.

Map pages depicting no data have been excluded.

Project Area

Record Search radius

N
W E
S

0 0.1 0.2 0.4 Miles

0 0.125 0.25 0.5 Kilometers

"Other" Reports Map
SSJV Information Center Record Search 23-495
Requester: Heather Froshour; Soar Environmental Consulting, Inc.
Project Name: Phase I Cultural Resources Assessment Report Lagomarsino
USGS 7.5' Quad(s): Tulare
County: Tulare

California Historical Resources Information System



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Southern San Joaquin Valley Information Center
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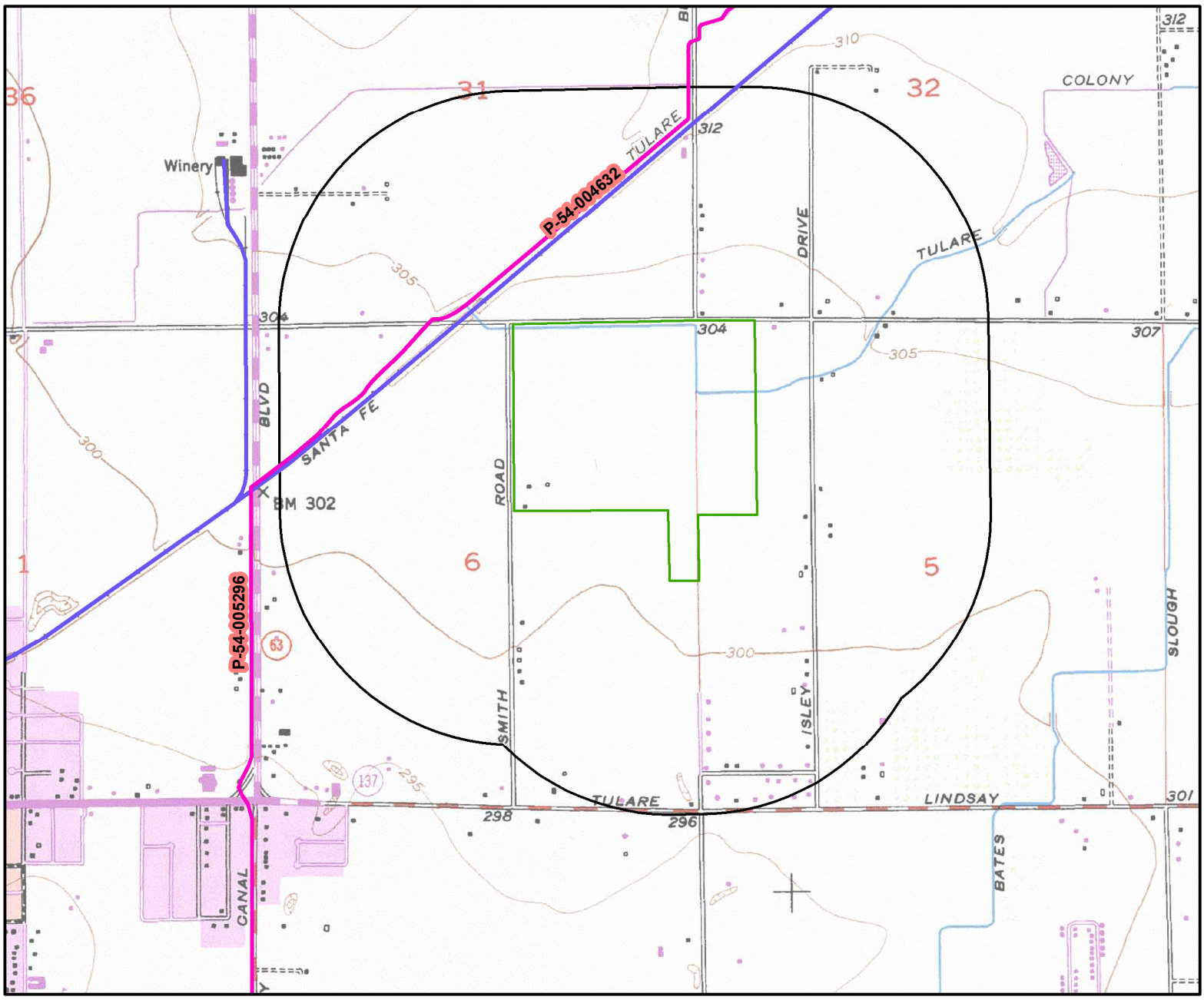
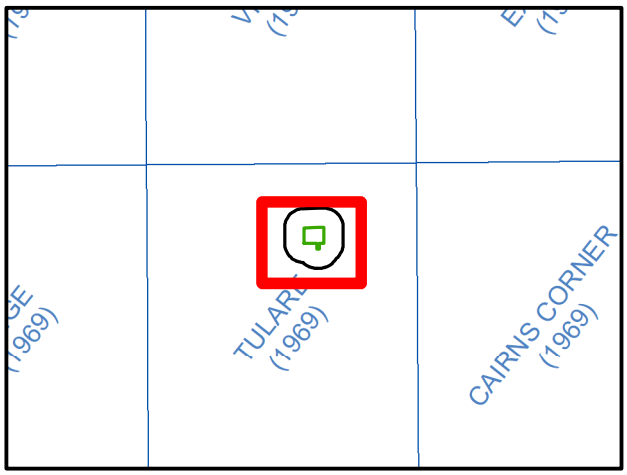




May depict confidential cultural resource locations. Do not distribute.
Map pages depicting no data have been excluded.

Project Area

Record Search radius

N
W E
S

0 0.1 0.2 0.4 Miles

0 0.125 0.25 0.5 Kilometers

Resources Map
SSJV Information Center Record Search 23-495
Requester: Heather Froshour; Soar Environmental Consulting, Inc.
Project Name: Phase I Cultural Resources Assessment Report Lagomarsino
USGS 7.5' Quad(s): Tulare
County: Tulare

APPENDIX B

Sacred Lands File & Native American Contacts List Request

Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
www.soarhere.com • 559.547.8884

Sacred Lands File & Native American Contacts List Request

Tuesday, December 5, 2023

Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Tel: 916.373.3710
Fax: 916.373.5471
nahc@nahc.ca.gov

RE: Phase I CEQA Cultural Resource Assessment Report for proposed housing development bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-080-002, 172-010-021, 172-010-022, & 184-020-010.

Dear Sir/Madam,

Please find attached one project location map for the proposed housing development project in Tulare, CA.. The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

This letter is intended to inform you of the project and to help ensure compliance with the California Environmental Quality Act (CEQA). As part of the Cultural Resources Study for the project, we are requesting your insights on potential Native American cultural properties and resources in and/or near the project.

Please respond at your earliest convenience if you have any information to consider for this study.

Also, we would greatly appreciate if you could review the attached map and indicate to us if there are any concerns you might have or input regarding potentially sensitive cultural heritage values in the project area and vicinity.

Feel free to contact me by email at hfroshour@soarhere.com or phone at 207.232.8912.

Most Sincerely,

Heather Froshour, M.A., R.P.A.
Sr. Archaeologist
Soar Environmental Consulting, Inc.
207.232.8912

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Phase I Cultural Resources Assessment Report Lagomarsino

County: Tulare

USGS Quadrangle Name: Tulare, California, Tulare County, 7.5' Series

Township: 20S **Range:** 25E **Section(s):** 5 & 6

Company/Firm/Agency: Soar Environmental Consulting Inc.

Street Address: 1322 East Shaw Ave. Suite 400

City: Fresno **Zip:** 93710

Phone: (559)547-8884

Fax:

Email: hfroshour@soarhere.com

Project Description:

The 140-acre project area is located on APN 172-080-002, 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St and Prosperity Ave in Tulare, California. The Project proposes a 140 acre housing subdivision with a center at approximately WGS 84 11N 293417E 4011151N.

Local Government Tribal Consultation List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Type of List Requested

■ **CEQA Tribal Consultation List (AB 52)** – ***Per Public Resources Code § 21080.3.1, subs. (b), (d), (e) and 21080.3.2***

☐ **General Plan (SB 18)** - ***Per Government Code § 65352.3.***

Local Action Type:

☐ **General Plan** ☐ **General Plan Element** ☐ **General Plan Amendment**

☐ **Specific Plan** ☐ **Specific Plan Amendment** ☐ **Pre-planning Outreach Activity**

Required Information

Project Title: Phase I Cultural Resources Assessment Report Lagomarsino

Local Government/Lead Agency: Soar Environmental Consulting Inc.

Contact Person: Heather Froshour

Street Address: 1322 East Shaw Ave. Suite 400

City: Fresno **Zip:** 93710

Phone: (559) 547-8884 **Fax:**

Email: hfroshour@soarhere.com

Specific Area Subject to Proposed Action

County: Tulare **City/Community:** Tulare

Project Description:

The 140-acre project area is located on APN 172-080-002, 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St and Prosperity Ave in Tulare, California. The Project proposes a 140 acre housing subdivision with a center at approximately WGS 84 11N 293417E 4011151N.

Additional Request

■ **Sacred Lands File Search** - ***Required Information:***

USGS Quadrangle Name(s): Tulare, California (2022) 7.5' Series Quad

Township: 20S **Range:** 25E **Section(s):** 5 & 6

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

SECRETARY
Sara Dutschke
Miwok

PARLIAMENTARIAN
Wayne Nelson
Luiseño

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Laurena Bolden
Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

COMMISSIONER
Vacant

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

January 2, 2024

Heather Froshour
Soar Environmental Consulting Inc.

Via Email to: hfroshour@soarhere.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Phase I Cultural Resources Assessment Report Lagomarsino Project, Tulare County

Dear Ms. Froshour:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measures.

  All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Tulare County
1/2/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Tulare	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900		spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278		nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440		smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	(559) 781-4610	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Phase I Cultural Resources Assessment Report Lagomarsino Project, Tulare County.

Record: PROJ-2024-000015
Report Type: AB52 GIS
Counties: Tulare
NAHC Group: All

Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
www.soarhere.com • 559.547.8884

Tuesday, January, 2024

Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245
Phone: (559) 924-1278
nescalone@tachi-yokut-nsn.gov

RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.

Dear Nichole Escalon, Cultural Specialist l,

Below, please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to Public Resources Code (PRC) § 21080.3.1 (d).

The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

4Creeks, Inc. has requested a Phase 1 Archaeological Resource Assessment (Phase 1) to determine the potential for cultural resources prior to development, pursuant to state and local laws, including the California Environmental Quality Act (CEQA) and Tulare County guidelines. Soar Environmental Consulting Inc. (Soar Environmental) proposes to complete the Phase 1 study for the present project.

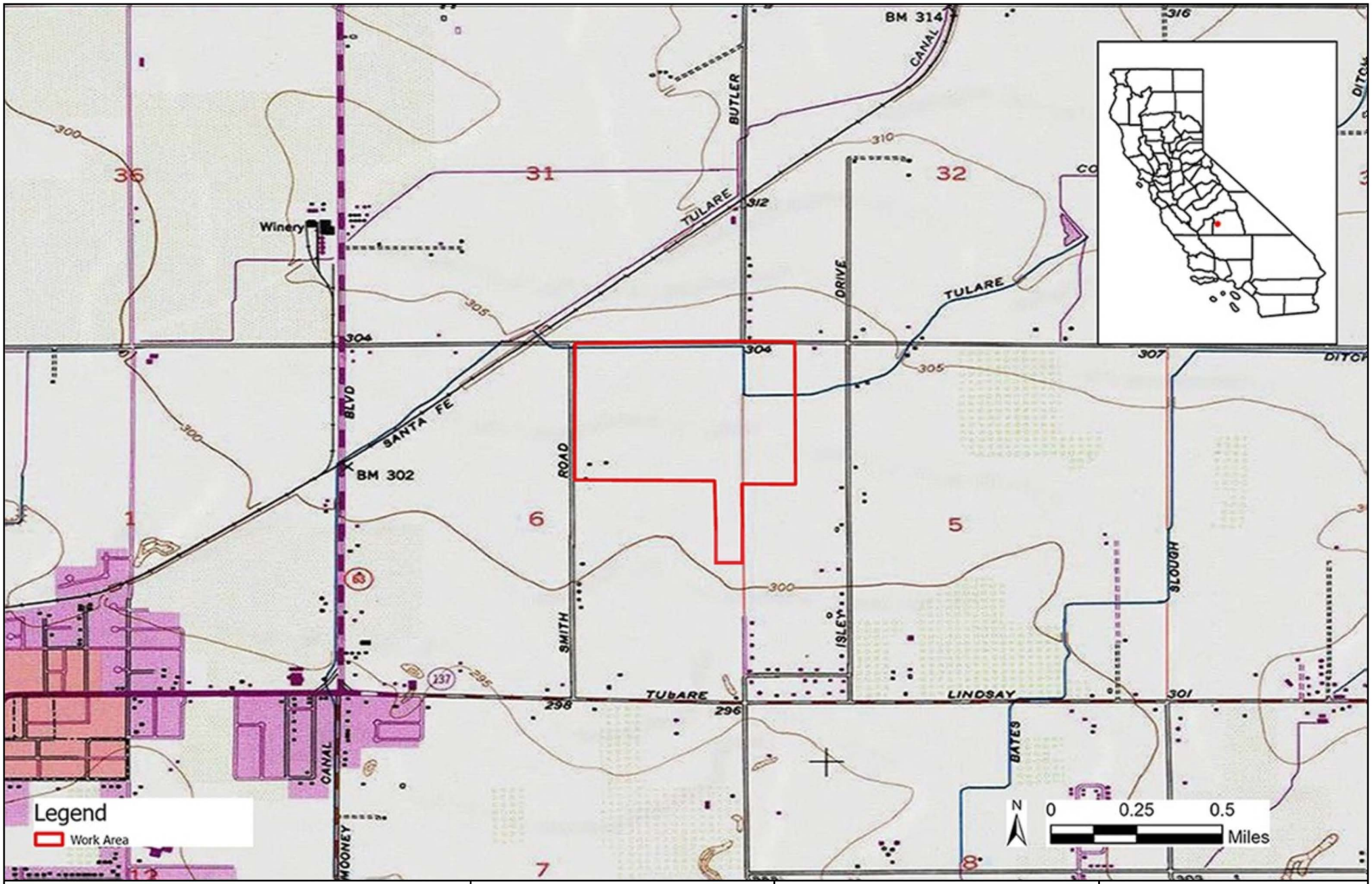
An important element of a Phase 1 study is to identify sites, resources, or locations of cultural importance to the local Native American community. As part of the process, Soar Environmental contacted the Native American Heritage Commission (NAHC) on December 5, 2023. On January 2, 2024, Soar received a response letter from the NAHC indicating **negative results** of the Sacred Lands File search. Furthermore, the NAHC identified your organization as a point of contact regarding potentially known recorded sites or cultural resources within Tulare County.

Soar contacted the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System on December 5, 2023. On December 18, 2023, SSJVIC revealed no historic cultural resources within the project area. No archaeological sites are known within the project area. Two (2) previous surveys have been conducted within the project area. Two (2) historic cultural resources were identified within the ½-mile search radius of the project area. No historic properties on federal, state, or local inventories have been evaluated within the project area. Four (4) previous surveys have been conducted within a ½-mile radius of the project area. On December 16, 2023, Soar conducted an archeological pedestrian field survey of the project area. **No cultural resources** were identified during the field survey, the South Fork Persian Ditch earthenware irrigation ditch.

Soar is contacting you to determine if you have any concerns regarding the proposed development. Pursuant to PRC § 21080.3.1 (d), you have **30 days** from the receipt of this letter to request consultation, in writing, with Soar. Should you have any concerns or knowledge of cultural resources in the specific project area, please contact me at hfroshour@soarhere.com or at (207) 232-8912 at your earliest convenience. If Soar does not hear from you within this time, we shall assume that you have no comments regarding this project.

Respectfully,

Heather Froshour, M.A., R.P.A.
Sr. Archaeologist
Soar Environmental Consulting, Inc.



SOAR ENVIRONMENTAL CONSULTING 1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884	Title Project Location Client 4Creeks	Facility Address Subdivision bounded by Morrison and Prosperity in the City of Tulare.	Figure # 1 Project Location Revision Date 12/05/2023

Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
www.soarhere.com • 559.547.8884

Tuesday, January, 2024

Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245
Phone: (559) 633-3440
smccarty@tachi-yokut-nsn.gov

RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.

Dear Samantha McCarty, Cultural Specialist II,

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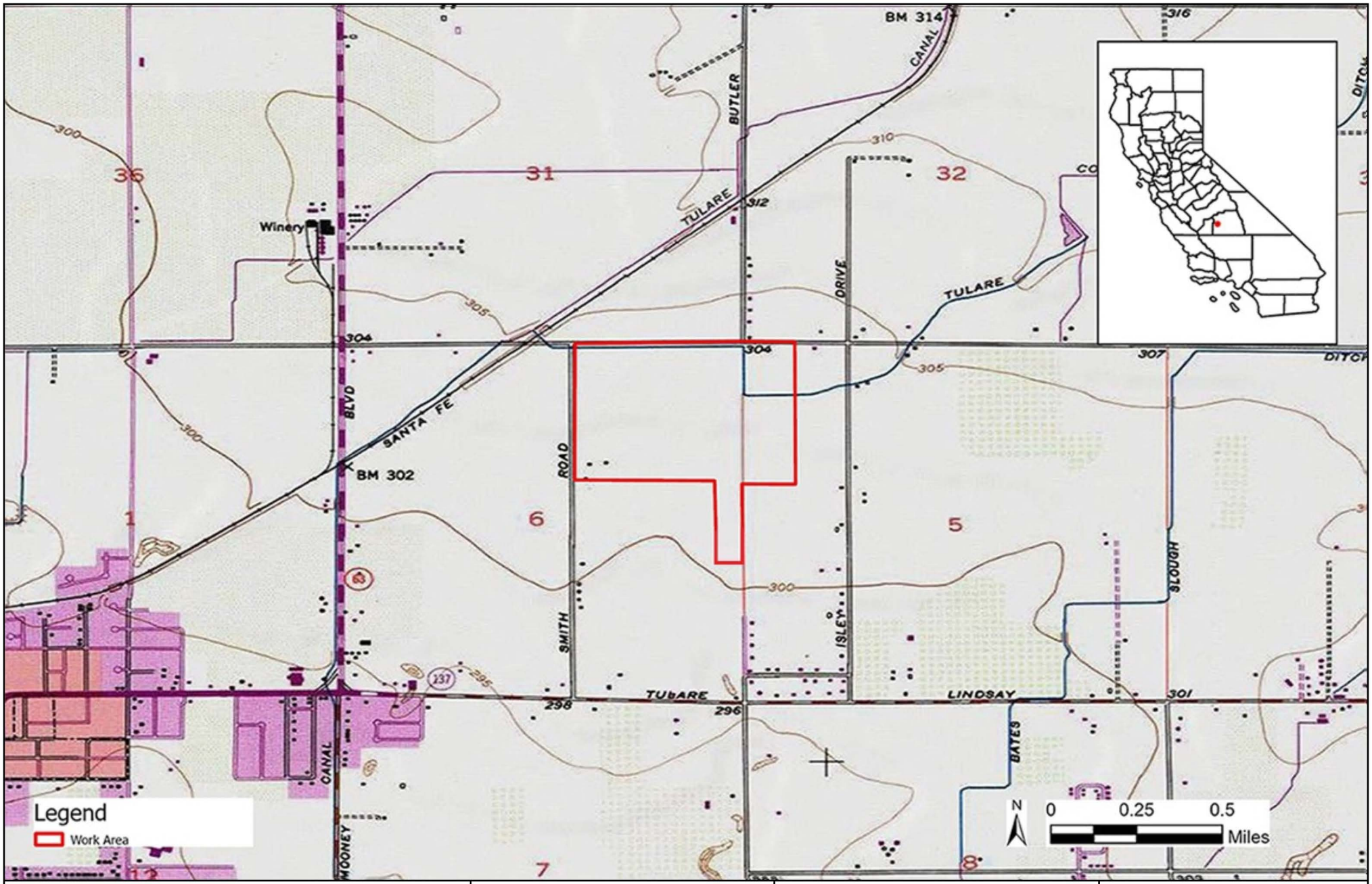
Heather Froshour, M.A., R.P.A.
Sr. Archaeologist
Soar Environmental Consulting, Inc.



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Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
www.soarhere.com • 559.547.8884

Tuesday January 2, 2024

Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245
Phone: (559) 423-3900
spowers@tachi-yokut-nsn.gov

RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.

Dear Shana Powers, THPO,

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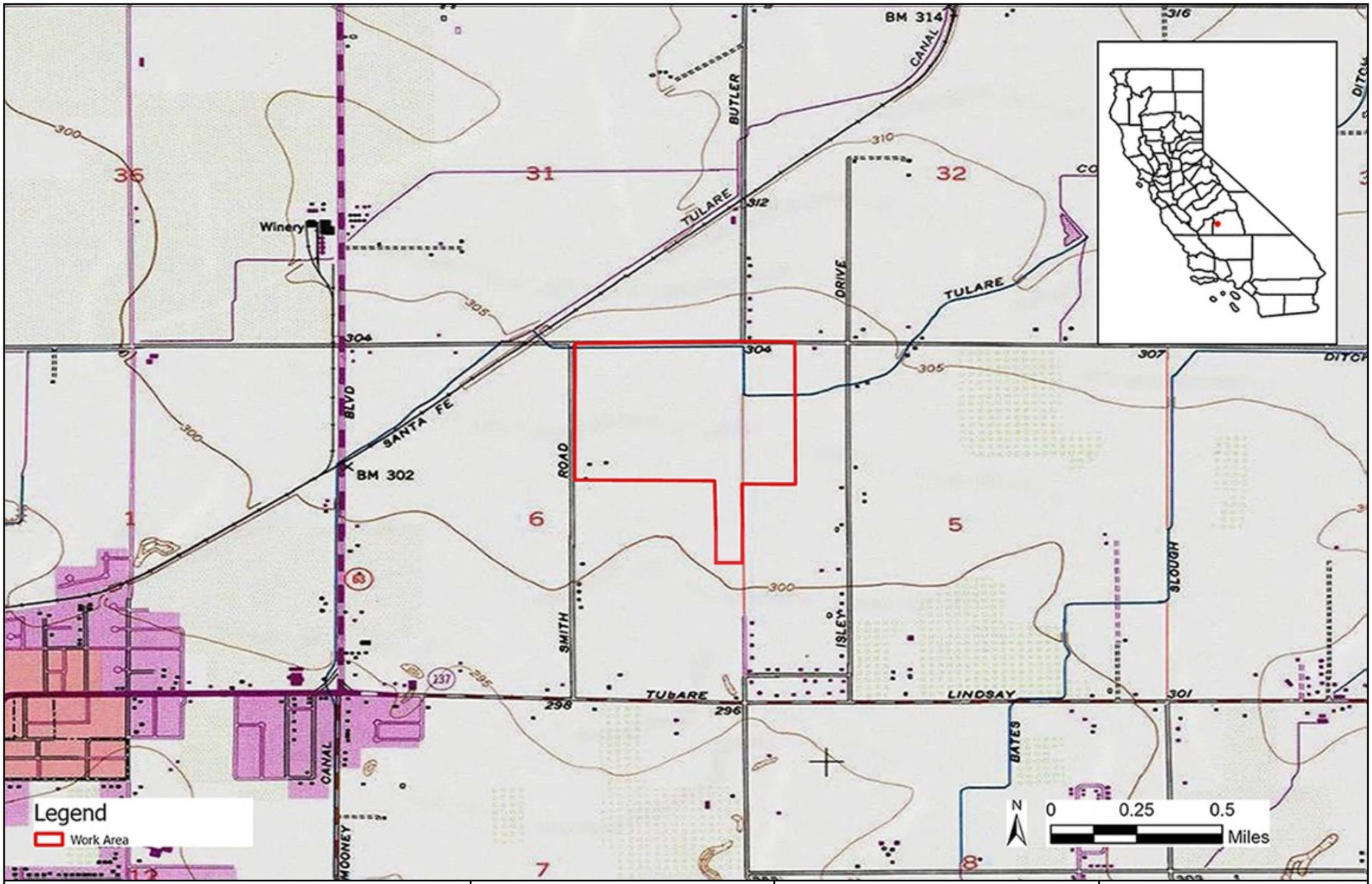

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Tuesday, January, 2024

Tule River Indian Tribe
P.O. Box 589
Porterville, CA, 93258
Phone: (559) 781-4271
neil.peyron@tulerivertribe-nsn.gov

RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.

Dear Neil Peyron, Chairperson,

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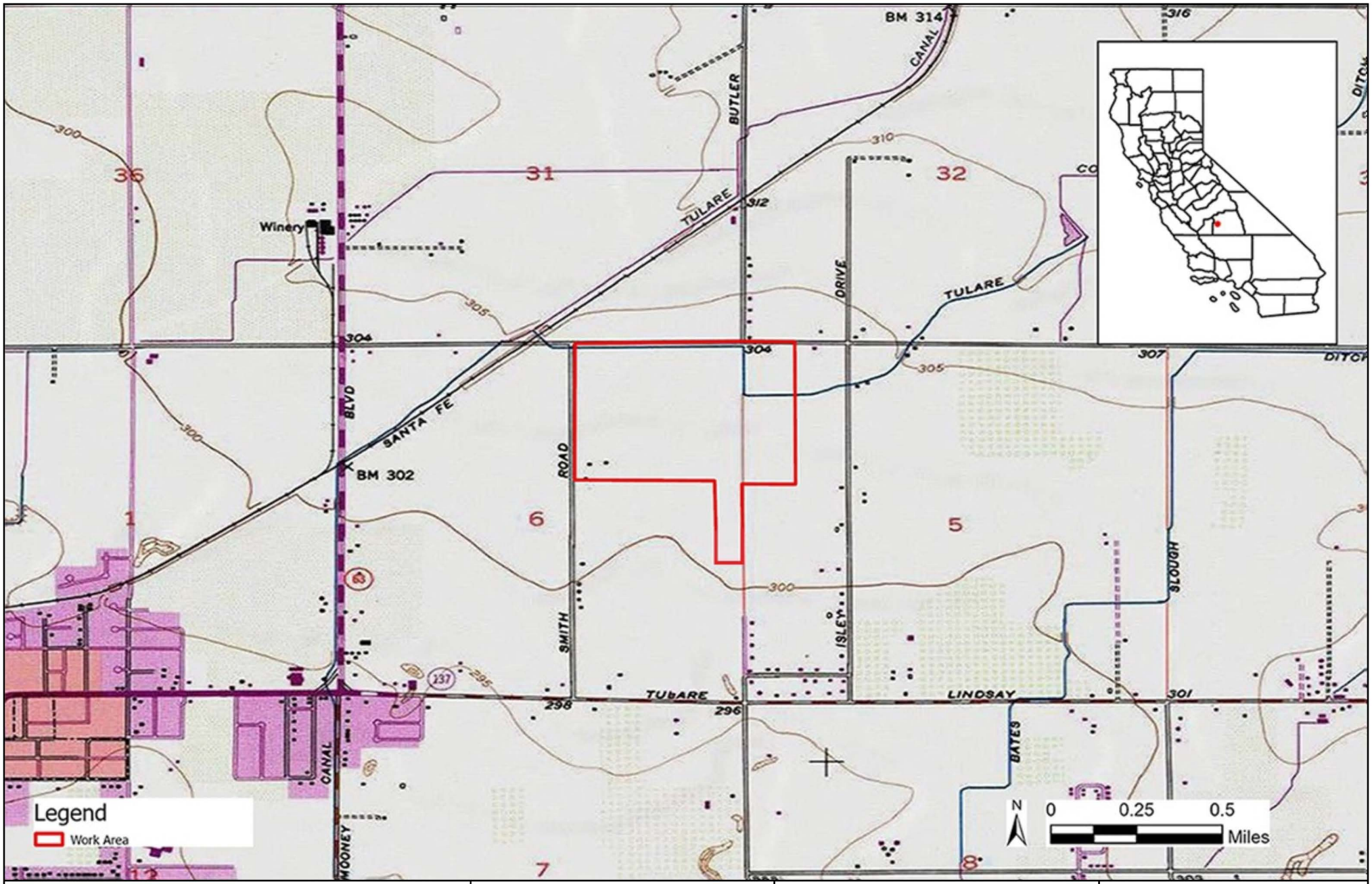

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Corporate Headquarters
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710
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Tuesday, January, 2024

Wuksachi Indian Tribe/Eshom Valley Band
1179 Rock Haven Ct.
Salinas, CA, 93906
Phone: (831) 443-9702
kwood8934@aol.com

RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.

Dear Kenneth Woodrow, Chairperson,

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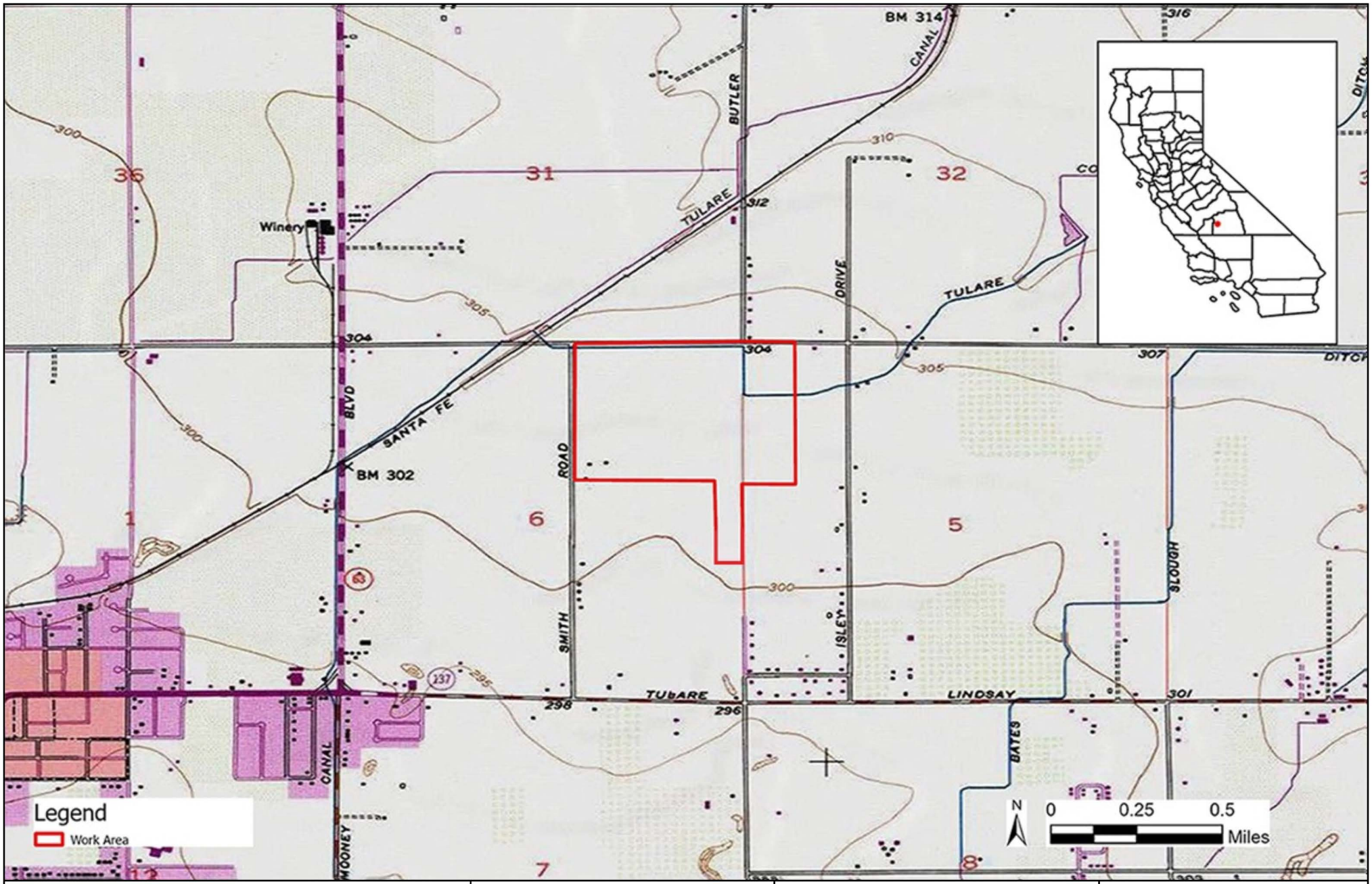
Sr. Archaeologist
Soar Environmental Consulting, Inc.



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APPENDIX C

Staff Resumes



Heather Froshour

Senior Archaeologist

12 Years of Relevant Experience

Biography

Ms. Froshour's background emphasises archaeology, anthropology, and cultural resources monitoring.

Education

- M.A. in Historical Archaeology, November 2014. University of Leicester, Leicester, UK.
- B.A. in Anthropology/Geography, June 2010. University of Southern Maine, Gorham/Portland, ME.

Professional Development

- 8 hr training in Wilderness Firest Aid (Sierra Rescue International)
- Adult, Child, Infant C.A.R.E. CPR & First Aid Training (Sierra Rescue International)
- Driver/Operator

Professional Affiliations

- Register of Professional Archaeologists
- CHRIS Qualified Archaeologist
- Society of American Archaeology - SAA
- Society of Historical Archaeology - SHA

Technical Expertise

- Lithic Analysis
- Technical Report Writing
- Lab analysis
- Cultural Monitoring
- Site Surveying – Phases 1-3
- Excavation
- Metal Detection
- Auguring
- Research
- MS Office
- Collector for ArchGIS

Practical Experience

Ms. Froshour is a registered professional archaeologist and cultural resources specialist with extensive experience in field and technical work. This experience including cultural resources monitoring, site survey, phase 1-3 excavations, and anthropology on various projects throughout the United States. She has a combined 8 years of experience in academic, consulting, museum, and public archaeology, and has worked in CRM since 2013 throughout various regions of the United States. Primary states of focus have included Maine, Massachusetts, Louisiana, Georgia, Virginia, Arizona, and California. She routinely assesses cultural resources for project related effects and their significance, provides cultural resource mitigation services, directs archaeological surveys of both excavation and pedestrian methods, and prepares documents for Section 106 of the NHPA, CEQA, and NRHP. Ms. Froshour also has experience working alongside trial monitors through survey with in the Colorado River and Mendocino National Forest regions. She has worked alongside the USDA Forest Service to provide post-fire monitoring and mitigation recommendations.

Ms. Froshour is certified by the Register for Professional Archeologists (Registrant ID: 5457).

Highlighted Projects

California High-Speed Rail Authority Construction Package 1, Cultural Resources Support, March 2023-Present
Heather is the Cultural Resources Support for this construction package. As such, she oversees staff archaeologist cultural reporting, monitoring, and artifact processing on the 33-mile right of way in Fresno and Madera Counties.

SOAR Environmental Consulting, Senior Archaeologist, January 2023-Present
Senior Archaeologist, Phase I Cultural Resources Assessment, Visalia, California
Provided desktop research, supervised the 2 person crew site pedestrian survey, full Phase 1 report, and Cultural Resources Initial Study for rezoning and housing subdivision construction project in Tulare County.

Senior Archaeologist, Phase I Cultural Resources Evaluation, Yokuts Valley, California
Provided desktop research, tribal consultation, and full Phase 1 report for the construction a new saber transmission tower to accompany existing USACE and CAL FIRE structures on a 100 square feet area on top of Bear Mountain in Fresno County.

Senior Archaeologist, Phase I Cultural Resources Evaluation, Shirley Meadows, California
Provided desktop research, tribal consultation, and full Phase 1 report with DPR forms for the construction a new saber transmission tower, and concrete masonry shelter enclosed in an 8 foot tall wire fence on a 100 square feet area on top of Shirley Peak in Kern County.

Senior Archaeologist, Phase I Cultural Resources Evaluation, Mountain Ranch, California
Provided desktop research, tribal consultation, and full Phase 1 report with DPR forms for the construction a new saber transmission tower, and propane tank enclosed in an 8 foot tall wire fence on a 100 square feet area on top of Quiggs Mountain in Calaveras County.

Senior Archaeologist, Phase I Cultural Resources Assessment, Glennville, California

Provided desktop research, site pedestrian survey, tribal consultation, and full Phase 1 report for the construction a new saber transmission tower, CMU block shelter, and parking lot enclosed in a wire fence on a 100 square feet area on top of Mount Pheasant in Kern County.

Senior Archaeologist, Phase I Cultural Resources Assessment, Bakersfield, California

Provided desktop research, site pedestrian survey, and full Phase 1 report for rezoning project and multiple family residence construction project.

Senior Archaeologist, Phase I Cultural Resources Assessment, Joshua Tree, California

Provided desktop research, site pedestrian survey, and full Phase 1 report for upscale yurt campground construction project.

Post Fire Fuels and Priority Heritage Asset Assessment Surveys, Grindstone Region, CA (June 2022-December 2022). The Great Basin Institute, Archaeological Crew Lead.

Phase I pedestrian surveys and site recording on post-wildfire burned landscapes within the Mendocino National Forest. Overseeing a small crew in the field survey, site recording, and completion of extensive USDA Forest Service site reports and mapping of cultural resources in the area. Ensured that all pertinent data is documented and reported to Forest Services standards with specific attention to current field conditions, disturbances, vegetation, terrain, and geospatial data of cultural resources. Provided day to day support of the crew and worked as a liaison between the Great Basin Institute and Mendocino National Forest personnel. Conducted Section 106 and Section 110 Priority Heritage Asset assessments of archaeological resources throughout the eastern region of the Mendocino. Assisted in final Phase 1 survey report writing.

Various Cultural Resource Management Survey Projects, GA & NC (June 2021- April 2022). TerraXplorations, Inc., Archaeology Field Director.

Phase I shovel testing in various locations throughout Georgia, in addition to a single project just outside of Raleigh, NC. These projects include road, bridge, and culvert improvement surveys as well as solar tract, farm, and generator surveys. All projects were conducted in 30m intervals along transect within the ESB of the survey area. All positive shovel tests were then delineated in 15m interval cruciform to determine site boundaries. Several projects required the use of metal detection grids in order to thoroughly survey areas of known Civil War activity. A number of projects for the Georgia Department of Transportation also required the probing of areas within the project ESB that were located within 1km from a known cemetery, with potential anomalies delineated and all results fully recorded. Duties include overseeing and directing field crews in locating, collecting, recording, and interpreting data from the survey. The supervision of personnel, including aiding in hiring and firing, performance reviews, training, work allocation, and problem resolution. Ensuring safe work practices and directing morning safety meetings to address potential hazards and safety concerns in the areas scheduled for fieldwork that day. Participation in field and office meetings with PIs and company owners to address scheduling and management procedures based on client needs as well as those of state and federal regulations and requirements.

Cultural Resource Management Survey Project, VAM-1 and Glasgow Pipeline Replacement, VA (May 2021-June 2021). TerraXplorations, Inc., Archaeology Crew Chief.
Phase I shovel test excavations from the replacement of the VAM-1 and Glasgow natural gas pipelines in the Blue Ridge Mountains, near the Appalachian Trail. Evaluated and conducted field work in various conditions in primarily mountainous terrain. Under direct supervision helped to manage and organize field crew in order to complete the project in a timely and efficient manner. Maintained field equipment and assisted in the writing and compilation of all field paperwork. Personally in charge of the majority of all mappings of and oversight of field crew for sites throughout the project area.

Various Cultural Resource Management Survey Projects, LA & MS (August 2020-May 2021). TerraXplorations, Inc., Archaeology Field Technician.
Phase I shovel test excavations for bank mitigation in North Eastern Mississippi along the Buttahatchee River. Phase III survey of two projects; the historic St. Amelia Plantation in Welcome, Louisiana and an unnamed prehistoric village in Plaquemine, Louisiana. The phase III projects both required excavating the foundations of various structures, and in the case of the prehistoric site excavating and mapping postholes within pits. The projects also required drawing plan views, and stratigraphic profiles, as well as feature and level write-ups. Unit excavations included 1mx1m to 3mx3m units, with a few requiring the extension of existing units to chase out observed features and artifact clusters.

Various Cultural Resource Management Survey Projects, ID & WI (June 2020 -July 2020). Tetra Tech, Inc., Archaeology Field Technician.
Phase I pedestrian surveying of various wind and solar farm projects throughout corn and soybean fields.

Cultural Resource Management Survey, Acadiana to Gillis, LA (January 2020-March 2020). BGE, Inc., Archaeology Field Technician.
Phase I shovel test excavations of proposed natural gas pipeline between Acadian and Gillis, Louisiana. This project entailed the excavation of 30mx30m units with distance varying based on HPA and LPA guidelines (a spacing of 30m to 50m respectively). A requirement of the survey was to maintain daily investigation point forms for individual shovel test units. In addition to this, it was required to aid in recording artifacts and photos of sites found throughout the project.

Various Cultural Resource Management Survey Projects, MN & IA (November 2019-December 2019). In Situ Archeological Consulting LLC, Archaeology Field Technician.
Phase I pedestrian surveying of various natural gas and cellular tower projects, as well as Phase II field work entailing the excavation of 45cmX45cm test units and GPS data collection. The projects also occasionally required the writing of site forms, and research for future projects at the Minnesota SHPO collections.

Cultural Resource Management Survey, Ten West Link Project, CA & AZ (August 2019-October 2019). POWER Engineers Inc., Archaeology Field Technician.
Phase I pedestrian survey of the proposed 500 kV transmission line connecting electrical substations in Tonopah, Arizona and Blythe, California. This project entailed working in one of five teams, and often included 1-2 tribal monitors from the Colorado River Indian Tribes. The right of way crews used a 400ft buffer for the corridor, with each team using a 15m spread to survey the proposed transmission line. This survey required the use of a Trimble GPS system to navigate the corridor and plot both isolate and site locations for GIS and recording crew



- SWPPP
- CPESC
- Fish Habit
- Biological
- Native Pla
- Groundwa
- Hazardous

Evan G. Studley,

Sr. Project Manager/ Geologist/QSP-QISP/HazMat

30 Years of Environmental Consulting

Biography

As a Senior Geologist, Evan has experience in developing and managing all facets of Construction Projects, including construction oversight, SWPPP development and monitoring, CEQA and NEPA permitting, conducting geological surveys, Phase I and Phase II Environmental Site Assessments, hydrogeological investigations, fish habitat conservation, stream restoration, biological studies, and soil and groundwater remediation throughout California and Nevada.

Education

BS, Geology, California State University Fresno, Fresno, CA.

Certifications/Workshops

- Qualified SWPPP Practitioner (QSP) #26898
- Qualified Industrial Stormwater Practitioner (QISP) #01072
- Hazardous Waste in California Certificate
- DOT Hazardous Waste Transportation Certificate

Affiliations

- Society for California Archaeology
- California Association of Environmental Professionals

Technical Expertise

- Geological Surveys
- Phase I and II Environmental Site Assessments (ESA)
- Hydrogeological Monitoring

Practical Experience

As a Senior Geologist, Evan has robust experience in developing and managing all facets of Construction. Evan has experience with Hazardous Materials and Hazardous Waste identification and soil, groundwater, and air sampling. His field experience includes observations of the release of hazardous materials through stressed vegetation, soil staining, leachate, waste material buildup, water discoloration, odor, and sheen identification. Projects include hazardous materials assessments, project management, construction oversight, SWPPP compliance and monitoring, CEQA and NEPA permitting, geological surveys, Environmental Site Assessments, hydrogeological investigations, fish habitat conservation, stream restoration, biological surveys, and soil and groundwater remediation throughout California and Nevada. Evan characterizes soil types, investigates impacts on streams and waterways, and interprets hydrogeological gradients. Evan has investigated unconfined groundwater seasonal variations and analyzed depth to soil/bedrock interface based on groundwater monitoring well datum and field determination of groundwater depth and flow direction. Evan has performed stream restoration of California rivers utilizing natural materials to mimic naturally occurring conditions.

Highlighted Projects

National Park Service, Yosemite "The Fort" Building Hazardous Materials Assessment Plan – Lead Investigator

The National Park Service seeks to repopulate 1930's era building known as "The Fort." Evan and his team assessed the locations of asbestos, lead, and other substances onsite. His team reviewed previous studies, updated them with current data, and provided a comprehensive technical report to the Park Service.

California High-Speed Rail Del Monte Phase II ESA, Fresno, CA

Mr. Studley prepared a Phase II ESA for the former Del Monte Food Processing plant site with an underground storage tank that had leaked for 50 years. He screened for contaminants from soil borings, provided recommendations for additional steps, and designed and implemented a remediation strategy.

Caltrans Sacramento I-5 West End Viaduct

The California Department of Transportation, District 3, sought to strengthen the I-5 West End Viaduct superstructure to increase permitted loads. Caltrans sought out professional and technical services for the project approval and environmental document phase of the project.

Evan led the Soar Environmental team to conduct initial hazardous waste site assessments and investigations, involving interviews with past/present owners, operators, and occupants of the project site, reviewed historical and governmental documentation about the site, and visually inspected the site and adjoining properties. Soar also investigated a hazardous

waste site involving soil, lead-based paint, and asbestos-containing material sampling. Evan's team submitted the draft and final supplemental assessments, necessary technical reports for hazardous waste assessments, and the lead and asbestos investigative reports.

California High-Speed Rail, Construction Package 1 SWPPP/Hazardous Waste Oversight – Fresno

Evan served as the SWPPP/Hazardous Waste Oversight Manager for the 33-mile Construction Package 1 of the California High-Speed Rail Project. Evan manages the contractor's implementation of the Construction General Permit and SWPPP to ensure compliance with all permits, including water and air quality requirements. He ensured entries in the Stormwater Multiple Application and Report Tracking System (SMARTS) were consistent with field conditions, including Water Pollution Control Drawings, acreage changes, training, and documentation completion. Evan ensures water quality compliance with the Mitigation Monitoring and Reporting Program, evaluates the effectiveness of water quality Environmental Management Systems, and develops reports to demonstrate compliance with final permit measures. His guidance ensures our streams are free of sediment discharge per the SWPPP, General Construction Permit, CWA 401, and 404 Certifications. He provides novel recommendations for BMP improvements in environmentally sensitive areas and maintains successful working relationships with state, federal, and municipal regulatory agencies.

Ahwahnee Hotel Geotechnical Subsurface Investigation – Yosemite National Park

Evan performed a geotechnical subsurface investigation using seismographs to determine the subsurface soil structure beneath the Ahwahnee Hotel in Yosemite Valley, California, in preparation for building design modifications for seismic retrofit of the historic hotel. During this project, Evan gathered data that provided valuable information on depth to bedrock, depth to decomposed granite, and groundwater beneath the historic Ahwahnee Hotel. The data Evan collected during this field exercise aided in the determination of design parameters for the protection and mitigation from potential damage to the hotel during an earthquake. Evan performed the subsurface survey with an array of seismic sensors spread out in a 50-foot line. The geology team was able to extrapolate subsurface thickness and densities of soil, decomposed granite, groundwater, and solid bedrock data below the Historic Ahwahnee Hotel. In the report, Evan was able to provide engineering design parameters to Yosemite National Park officials to aid in the preservation of historic buildings.

Native Plant Species Adaptive Management Revegetation on Ratzlaff Reach – United States Fish and Wildlife Service

As a consultant for the United States Fish and Wildlife Service (USFWS), Mr. Studley developed and implemented the native species revegetation on Ratzlaff Reach of the Merced River. The Merced River and Ratzlaff Reach sustained major damage from historic gold mining and dredging. The collaborative project objective was designed to reverse aquatic and riparian habitat degradation from gold dredging and gravel mining and subsequent water embankment within the floodplain and stream channel. After re-channeling, the river around a large floodplain pond, he was tasked with recontouring and revegetating the affected area of floodplain to accommodate a three-year flood release from the upstream reservoir.

use. As part of the recording crew later in the survey, it was also required to conduct thorough site analysis and recordation via site forms and Trimble points of each observed artifact and feature, both historic and prehistoric.

Authored Publications

2023 Froshour, Heather. “Phase I Cultural Resources Assessment: Elliot Housing Subdivision Project, Visalia, California.”

2023 Froshour, Heather. “Phase I Cultural Resources Evaluation: 30811 Bear Mountain Rd., Yokuts Valley, California.”

2023 Froshour, Heather. “Phase I Cultural Resources Evaluation: Shirley Peak, Rd. 622, Kern County, California.”

2023 Froshour, Heather. “Phase I Cultural Resources Evaluation: Sierra Vista Lookout., Quiggs Mountain, Mountain Ranch, California.”

2023 Froshour, Heather. “Phase I Cultural Resources Evaluation: Granite Rd., Mount Pheasant, Glennville, California.”

2023 Froshour, Heather. “Phase I Cultural Resources Assessment: 4415 Wilson Rd., Bakersfield, California.”

2023 Froshour, Heather. “Cultural Resources Desktop Assessment: 1941 N. Golden State Blvd., Fresno, California."

2023 Froshour, Heather. “Phase I Cultural Resources Assessment: 3174 Bonair Ave., Joshua Tree, California.”

2023 Froshour, Heather. “Cultural Resources Desktop Assessment: 3200 Rio Linda Blvd., Sacramento, California."

2023 Hawley, Maria and Froshour, Heather. “Cultural Resources Assessment, 18644 16th Ave., Stratford, California.”

2022 Lashway, Nick, Hovis, Chad, and Froshour, Heather. “Upper Thomes Forestwide Fuels Phase I Report: U.S.D.A. Forest Service Mendocino National Forest Covelo and Grindstone Ranger Districts, California.”

Academic Publications

2013 Hamilton, Nathan D. and Froshour, Heather D (presenter). “Explore 5,000 Years of History in Danvers, Massachusetts.”

2013 Froshour, Heather D. “Preserving the Past: Public and Historical Archaeology at the Rebecca Nurse Homestead, Danvers, Massachusetts.”

2012 Froshour, Heather D (presenter). “17th-18th Century Occupations in Danvers, Massachusetts.”



Maria Hawley

Staff Archaeologist

7 Years of Relevant Experience

Biography

Maria is an archaeologist specializing in California archaeology, Stone Age to End Middle Age archaeology, Pre-history of the South West, and Museum Methods with vast fieldwork experience in California.

Education and Professional Development

- BA Anthropology, California State University, Sacramento, CA – 2015
- Wildland Fire Resource Advisor (N-9042) – 2021
- National Incident Management System IS-00700.a FEMA – 2015
- Introduction to Incident Command System IS-00100.b FEMA – 2015
- Basic Incident Command System for Initial Response IS-00200.c FEMA – 2021
- Introduction to Incident Command Center IS-00100.c FEMA – 2021
- Resource Advisor (READ)
- Incident Qualification Card 00000141548
- Driver/Operator

Technical Expertise

- Cultural Resources Management
- Technical Writing
- Tribal Consultation
- CEQA/NEPA process
- Incident Management
- Trimble GPS
- ArcMap
- Avenza

Practical Experience

Maria Hawley is an Archaeologist trained in Archaeology, Physical Anthropology, Cultural Anthropology, and Linguistics. She specializes in California archaeology, Stone Age to End Middle Age archaeology, Pre-history of the South West, and Museum Methods. In addition, Maria has vast experience in tribal consultation, conducting cultural resources surveys and monitoring, artifact recovery, preservation, and management, excavation, sampling and testing, in-depth research and investigations, and technical report writing. Across the board, Maria ensures projects are carried out in a safe and timely manner and accordance with all established standards, procedures, and regulations. Maria also currently holds a RED CARD with Resource Advisor (READ) for Fire Archaeology, which means she can advise firefighters, during a fire, on the best route for them to enter a unit without harming resources.

Highlighted Projects

Lassen Volcanic National Park, Mineral, CA (2022): Archaeological Technician

Determines likely sites of archaeological interest; Prepares Cultural Resource Inventory reports and site forms; Monitors archaeological projects to ensure sufficiency of fieldwork; Conducts inventories of park cultural resources; Researches reference materials such as State and National register files, historical documents, archaeological reports, maps, and aerial photos; Reviews work in progress to ensure standards are being met; Conducts BAER site assessment to determine treatment or monitoring requirements; Prepares archaeological DPR forms, sketch maps, feature sketches and photographic logs; Conducts field surveys; Participates in the restoration and preservation of historic features such as log cabins and rock walls, and; served as crew chief/lead.

Bay Area PaleoWest Office, Walnut Creek, CA (2021-present): On-Call Archaeologist

Monitored archaeological sites to ensure resources would not be harmed while digging trenches; Participated in 1/8th screen wet and dry screening; Identified, and collected human remains, fauna remains chert flakes, and obsidian flakes; Extracted Native American remains and lithics for repatriation; Conducted excavation and testing of archaeological sites, including the careful recovery of sample materials; Identifies, labels, and packages artifacts for curation; Assisted in the preparation of archaeological and historical information to create interpretive materials for display and distribution; Participated in the collection of field data, digital photography, artifact identification, determined and directed the cultural needs for the project, and; Conducted Archaeological pedestrian surveys.

Pinon Heritage Solutions LLC, Sacramento, CA (2022): On-Call Archaeologist

Undertook basic archaeological field surveys; Recorded data and prepared survey records; Researched reference materials such as State and National Register files, historical documents, archaeological reports, maps, and aerial photos; Performed a variety of computations and assessments of standard archaeological data; Produced site and survey maps, and; Advised other employees on methods of cultural resource inventory and provided written instructions, research materials and supplies to all involved.

Rincon Consultants, Inc., Sacramento, CA (2020-2022): Archaeological Technician and On-Call Archaeologist

Monitored archaeological sites to ensure resources would not be harmed while digging trenches; Participated in construction monitoring, including trenching and underground construction; Adequately and professionally communicated with construction crew, senior Sherwood Valley Pomo tribal monitor and senior archaeologist; Prepared California DPR-523 forms; Participated in the collection of field data, digital photography, artifact identification, determined and directed the cultural needs for the project; Executed archaeological surveys, and; Identified and documented late 1800s to early 1900s historic artifacts.

Mountain G. Enterprises INC., Folsom, CA (2021): Archaeologist
Performed archaeological surveys and monitoring; aided in the FEMA funded timber salvation program; Prepared and input DPR forms into the NRM database; conducted inventories of Forest cultural resources; Evaluated environmental impacts on archaeological resources, and developed and recommended effective mitigation measures; Assisted in the preparation of archaeological and historical information to create interpretive materials for display and distribution; Actively worked towards building a relationship with local tribes, private contractors, and colleagues; Reviewed work in progress to see that standards for pre-field archaeological research, archaeological survey design, archaeological site recording, archaeological graphics, and archaeological final report are being met; Digitized records and performed basic GIS analysis in ArcMap; Served as field lead for pedestrian survey, collection of field data, digital photography, artifact identification, GPS data collection, and mapping; Evaluated complex archaeological and ethnographic studies; Worked closely with tribal monitors to identify lithics; Determined if historic features were 106 eligible, and; Participated in vegetation management.

USDA Forest Service, Plumas National Forest, Oroville, CA, and Mendocino National Forest, Willows, CA (2020-2021): Archaeological Technician
Prepared and input archaeological DPR forms into the NRM database; Conducted inventories of Forest cultural resources; Contributed to the input of heritage data to help support NEPA requirements and programmatic agreements; Performed archaeological surveys, archaeological site recording, and archaeological mapping; Contributed to the forest by reviewing and inputting my suggestions concerning survey contract interpretations to meet Plumas NF Heritage regulations and section 106 compliance; Worked closely and professionally with the Maidu tribal monitors in identifying prehistoric artifacts and features; Volunteered to aid other ecosystems management for cross training purposes; Regularly used Trimble GPS, Avenza maps which included downloading project maps and KMZ files, analog compass for navigation and shooting bearings for mapping, aerial photos to confirm site locations, and LiDAR maps to help read the terrain and identify possible archaeological land features; Flagged exclusionary site boundaries and updated site boundaries based on artifacts and features, and; Aided the logistics and ground support unit in the August Complex fire.

Cogstone Resource Management, Orange, CA (2020-2021): Paleontologist/Archaeological Surveyor
Aided several coastal monitoring projects; Surveyed the Merced and Serpatine formations; Carefully and meticulously meandered through the formations noting historical artifacts and pilopleistocene (Jurassic) fossils; Identified geologic structures, bedding contacts, and landform characteristics; Monitored construction site with a native monitor from the Chumash tribe; Observed ground disturbance, and; Communicated with contractors to extract petrified wood fossils.

Appendix D

Energy Calculations

Construction Equipment Energy Use

Phase Name	Off Road Equipment Type	Off Road Equipment Unit Amount[1]	Usage Hours Per Day[1]	Horse Power (lbs/sec)[1]	Load Factor[1]	Total Operational Hours	BSFC[2]	Fuel Used (gallons)[3]	MBTU[4]
Site Preparation	Rubber Tired Dozers	3	8	247	0.4	2880	0.367	14689.50	2041.84035
Site Preparation	Tractors/Loaders/Backhoes	4	8	97	0.37	3840	0.408	7909.63	1099.43898
Grading	Graders	1	8	187	0.41	2480	0.367	9816.00	1364.42445
Grading	Rubber Tired Dozers	1	8	247	0.4	2480	0.367	12649.29	1758.25142
Grading	Excavators	2	8	158	0.38	4960	0.367	15373.75	2136.95172
Grading	Scrapers	2	8	367	0.48	4960	0.367	45107.27	6269.91031
Grading	Tractors/Loaders/Backhoes	2	8	97	0.37	4960	0.408	10216.61	1420.10869
Building Construction	Cranes	1	7	231	0.29	21700	0.367	75045.95	10431.3871
Building Construction	Forklifts	3	8	89	0.2	74400	0.408	76005.42	10564.754
Building Construction	Generator Sets	1	8	84	0.74	24800	0.408	88473.73	12297.8484
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	65100	0.408	134093.00	18638.9265
Building Construction	Welders	1	8	46	0.45	24800	0.408	29462.78	4095.32597
Paving	Pavers	2	8	130	0.42	3520	0.367	9921.85	1379.13778
Paving	Paving Equipment	2	8	132	0.36	3520	0.367	8635.28	1200.30453
Paving	Rollers	2	8	80	0.38	3520	0.408	6141.41	853.655605
Architectural Coating	Air Compressors	1	6	78	0.48	1320	0.408	2836.36	394.254102
Total								546377.84	75946.52

Construction Phases

PhaseNumber	Phase Name	Phase Type	Phase Start Date[1]	Phase End Date[1]	Num Days Week[1]	Total Number of Days[1]
1	Site Preparation	Site Preparation	4/1/2025	6/15/2025	5	120
2	Grading	Grading	9/16/2025	11/23/2026	5	310
3	Building Construction	Building Constru	11/24/2026	10/11/2038	5	3100
4	Paving	Paving	10/12/2038	8/15/2039	5	220
5	Architectural Coating	Architectural Co	8/16/2039	6/18/2040	5	220

Notes

1. CalEEMod Default Values Used
2. BSFC - Brake Specific Fuel Consumption (pounds per horsepower-hour) – If less than 100 Horsepower = 0.408, if greater than 100 Horsepower = 0.367
3. Fuel Used = Load Factor x Horsepower x Total Operational Hours x BSFC / Unit Conversion
4. MBTU calculated for comparison purposes. Assumed 1 gallon of diesel = 0.139 MBTU

Mobile Energy Use (Construction)

Worker Trips

	Daily Worker Trips[1]	Worker Trip Length[1]	VMT/Day	MPG Factor (EMFAC2017)	Gallons of Gas/Day	# of Days	Total Gallons of Gas	MBTU
Site Preparation	18	10.8	194.4	29.23	6.7	120	798	92.64959
Grading	20	10.8	216	29.23	7.4	310	2291	265.9386
Building Construction	312	10.8	3369.6	29.23	115.3	3100	357364	41486.43
Paving	15	10.8	162	29.23	5.5	220	1219	141.548
Architectural Coating	62	10.8	669.6	29.23	22.9	220	5040	585.065
Total	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**3970**	**366712**	**42571.63**

Vendor Trips

	Daily Vendor Trips	Vendor Trip Length	VMT/Day	MPG Factor	Gallons of Diesel/Day	# of Days	Total Gallons of Diesel	MBTU
Building Construction	105	7.3	766.5	8.43	90.9	3100	281868.3274	39179.7

Fleet Characteristics

	Vehicle Class	Fleet Mix	2024 MPG Factor (EMFAC2017)	Average MPG Factor
Assumed Vehicle Fleet for Workers	LDA	33%	33.24	
	LDT1	33%	28.07	
	LDT2	33%	26.07	29.13
Assumed Vehicle Fleet for Vendor Trips	MHD	50%	9.74	
	HHD	50%	7.12	8.43

Notes

1. CalEEMod Default values used
2. MBTU calculated for comparison purposes. Assumed 1 gallon of gasoline = 0.11609 MBTU

Summary of Energy Use (Construction)

	Off-Road Equipment Fuel (Diesel)		On-Road Vehicle Fuel				Total MBTU
			Diesel		Gasoline		
	Gallons	MMBTU	Gallons	MMBTU	Gallons	MMBTU	
FNC Farming	546377	75946	281868	39179	366712	42571	157696
						Total Construction Energy Use	157696
						Average Annual Construction Energy Use	105131

Mobile Energy Use (Operations)

Total Annual VMT from Project (CalEEMod)	**17,624,143**

Fleet Mix & Fuel Calculations

Vehicle Class	Proportion of Fleet Mix[1]	Annual VMT by Vehicle Class	Proportion of vehicle class using gas or diesel (EMFAC2021)[2]		Annual VMT by Vehicle Class and Fuel Type		Fuel Efficiency (MPG) by Vehicle Class and Fuel Type (EMFAC2017)		Annual Fuel Use from Project (gallons)		MBTU/Year[3]
			Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	
LDA	0.525357000	9258966.9	99%	1%	9171548.53	87418.36	35.18	58.79	260703.5	1487.0	30471.8
LDT1	0.051382000	905563.7	100%	0%	905249.48	314.23	29.77	27.69	30408.1	11.3	3531.7
LDT2	0.167800000	2957331.2	99%	1%	2937137.36	20193.84	28.32	43.82	103712.5	460.8	12104.0
MDV	0.162287000	2860169.3	97%	3%	2786623.55	73545.74	21.79	30.63	127885.4	2401.1	15180.0
LHD1	0.028850000	508456.5	43%	57%	220194.68	288261.85	8.73	18.39	25222.8	15674.9	5106.9
LHD2	0.007480000	131828.6	27%	73%	36087.33	95741.26	7.56	16.50	4773.5	5802.5	1360.7
MHD	0.012195000	214926.4	8%	92%	16883.51	198042.92	5.16	9.99	3272.0	19824.1	3135.4
HHD	0.015949000	281087.5	0%	100%	43.49	281043.97	4.85	7.43	9.0	37825.6	5258.8
OBUS	0.000630000	11103.2	44%	56%	4846.59	6256.62	5.03	8.43	963.5	742.2	215.0
UBUS	0.000469000	8265.7	77%	23%	6332.10	1933.62	4.80	10.00	1319.2	193.4	180.0
MCY	0.022910000	403769.1	100%	0%	403769.12	0.00	37.99	NA	10628.3	0.0	1233.8
SBUS	0.001396000	24603.3	20%	80%	5016.12	19587.18	9.34	8.28	537.1	2365.6	391.2
MH	0.003296000	58089.2	65%	35%	37835.63	20253.55	5.06	10.02	7477.4	2021.3	1149.0
Total	**100.000100%**	**17624160.6**			**16531567.48**	**1092593.14**			**576912.2**	**88809.8**	**79318.3**

Fleet Characteristics

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: County
Region: Tulare
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for VMT, trips/year for Trips, tons/year for Emissions, tons/year for Fuel Consumption

GASOLINE

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (Annual)	Trips (Annual)	Fuel Consumption (tons/year)	Annual Fuel Consumption (gallons)	MPG
Tulare	2024	HHDT	Aggregate	Aggregate	Gasoline	1	40832	5642	20.78	8.69	4699.19
Tulare	2024	LDA	Aggregate	Aggregate	Gasoline	200092	2758210730	325924543	33135.62	82978.87	33239.92
Tulare	2024	LDT1	Aggregate	Aggregate	Gasoline	20489	250774265	31894273	2948.74	8932.61	28074.03
Tulare	2024	LDT2	Aggregate	Aggregate	Gasoline	66393	838611285	105810710	17680.41	31789.15	26380.43
Tulare	2024	LHDT1	Aggregate	Aggregate	Gasoline	5502	58348244	26803634	3808.07	6870.06	8493.13
Tulare	2024	LHDT2	Aggregate	Aggregate	Gasoline	905	9488315	4406586	531.73	1285.70	7379.91
Tulare	2024	MCY	Aggregate	Aggregate	Gasoline	9526	22280789	6611059	174.10	588.70	37847.58
Tulare	2024	MDV	Aggregate	Aggregate	Gasoline	68672	787150190	106279450	19692.36	38420.97	20487.51
Tulare	2024	MH	Aggregate	Aggregate	Gasoline	920	2631245	30111	277.79	536.98	4900.12
Tulare	2024	MHDT	Aggregate	Aggregate	Gasoline	423	7125304	2764314	837.27	1429.47	4984.57
Tulare	2024	OBUS	Aggregate	Aggregate	Gasoline	141	1996552	922982	323.76	410.91	4858.85
Tulare	2024	SBUS	Aggregate	Aggregate	Gasoline	84	1324045	109782	64.45	144.05	9191.53
Tulare	2024	UBUS	Aggregate	Aggregate	Gasoline	76	2232433	99041	21.38	483.67	4615.66

DIESEL

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (annual)	Trips (annual)	Fuel Consumption (tons/year)	Annual Fuel Consumption (gallons)	MPG
Kings	2024	HHDT	Aggregate	Aggregate	Diesel	6329	263877277	22366793	37063.1	37063112	7.12
Kings	2024	LDA	Aggregate	Aggregate	Diesel	1810	26289809	2985204	474.4	474415	55.42
Kings	2024	LDT1	Aggregate	Aggregate	Diesel	13	87050	14634	3.3	3271	26.61
Kings	2024	LDT2	Aggregate	Aggregate	Diesel	390	5765743	658531	140.0	139970	41.19
Kings	2024	LHDT1	Aggregate	Aggregate	Diesel	7282	76385011	29952675	4256.6	4256603	17.95
Kings	2024	LHDT2	Aggregate	Aggregate	Diesel	2329	25172917	9581028	1564.9	1564922	16.09
Kings	2024	MDV	Aggregate	Aggregate	Diesel	1548	20774799	2543773	719.8	719773	28.86
Kings	2024	MH	Aggregate	Aggregate	Diesel	532	1408515	17405	143.3	143324	9.83
Kings	2024	MHDT	Aggregate	Aggregate	Diesel	4433	83579546	12100911	8579.8	8579805	9.74
Kings	2024	OBUS	Aggregate	Aggregate	Diesel	116	2577417	329811	319.0	319022	8.08
Kings	2024	SBUS	Aggregate	Aggregate	Diesel	509	5170191	1919120	636.3	636286	8.13
Kings	2024	UBUS	Aggregate	Aggregate	Diesel	22	681715	28821	68.3	68342	9.98

19.91

Notes

1. CalEEMod Defaults Used
2. Proportion of diesel vs. gasoline vehicles calculated based on total annual VMT for each vehicle class
3. MBTU Calculated for comparison purposes. Assumed 1 gallon of gasoline = 0.116090 MBTU and 1 gallong of diesel = 0.139 MBTU

Summary of Energy Use (Operation)

Mobile Fuel Use		
	Gal/Year	**MMBTU**
FNC Subdiv. (Gasoline)	576912	69394
FNC Subdiv. (Diesel)	88809	12201
Electricity Use		
	kWh/Year	**MMBTU**
FNC Subdiv.	4789650	16342
Natural Gas Use		
	kBTU/Year	**MMBTU**
FNC Subdiv.	13775200	13775
		MMBTU
Total Operational Energy Use		**111713**

Appendix E

Traffic Study

Project No: 624-04

TRAFFIC STUDY

MIXED USE DEVELOPMENT

PROSPERITY AVENUE & MORRISON STREET

TULARE, CALIFORNIA

Prepared for:

4CREEKS

March 2024

Prepared by:

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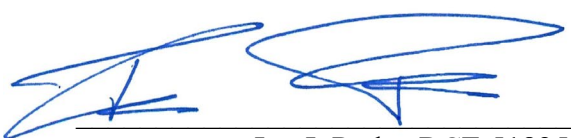

Ian J. Parks, RCE 51825



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INTRODUCTION

The purpose of this study is to evaluate the potential traffic impacts of a proposed mixed-use development located on the south side of Prosperity Avenue east of Morrison Street in Tulare, CA. A vicinity map and location map are presented in Figures 1 and 2, respectively.

The proposed project consists of 524 single-family residential homes as well as 50,000 square feet of retail buildings. The site plan for the project is shown in Figure 3.

A. Land Use, Site and Study Area Boundaries

The existing zoning is A (Agriculture). The existing land use designation is A (Agriculture). Proposed zoning and land use designation is neighborhood commercial and residential.

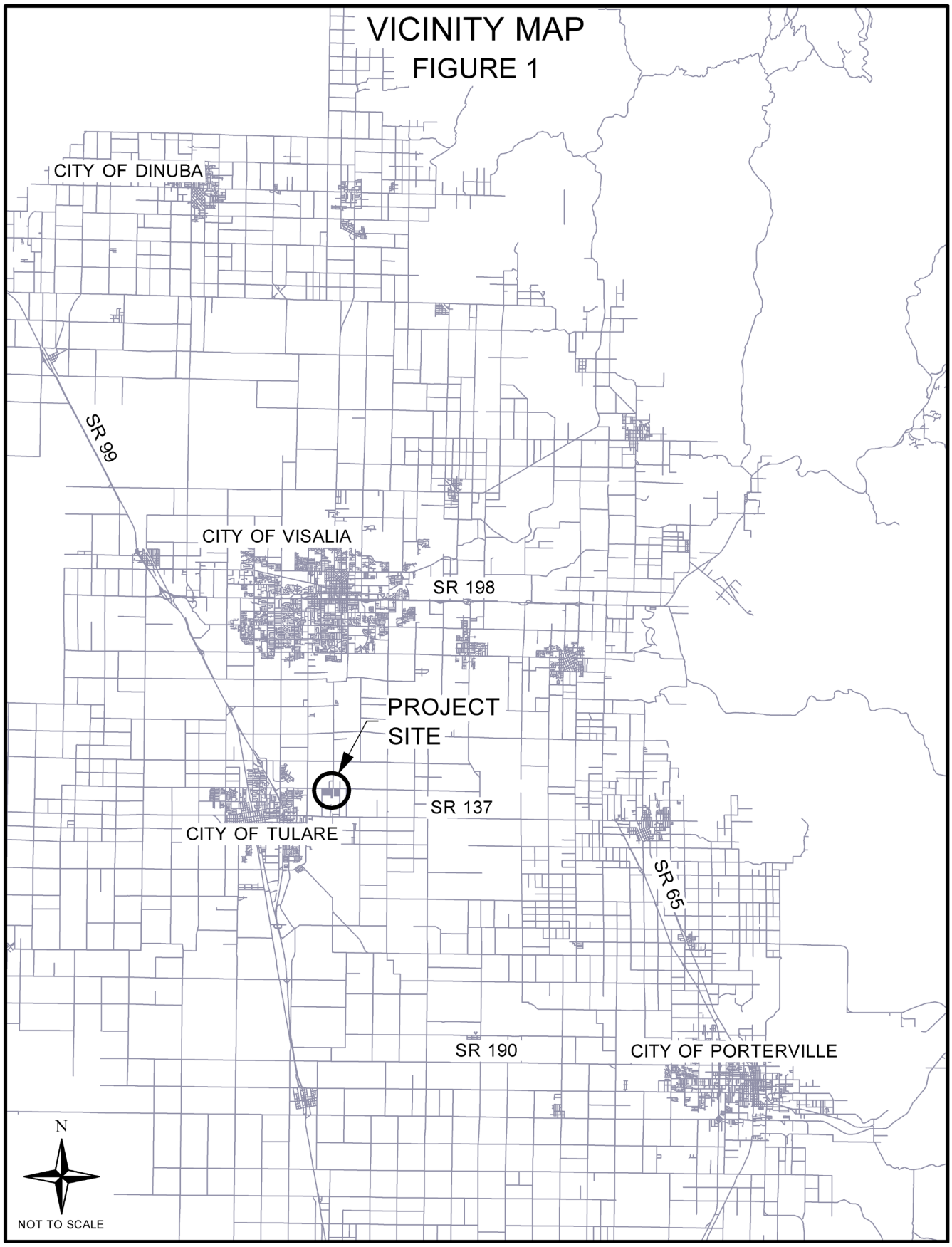
The study area includes a total of 12 intersections (four stop-controlled, eight signalized). The scope of the study was developed in association with the City of Tulare.

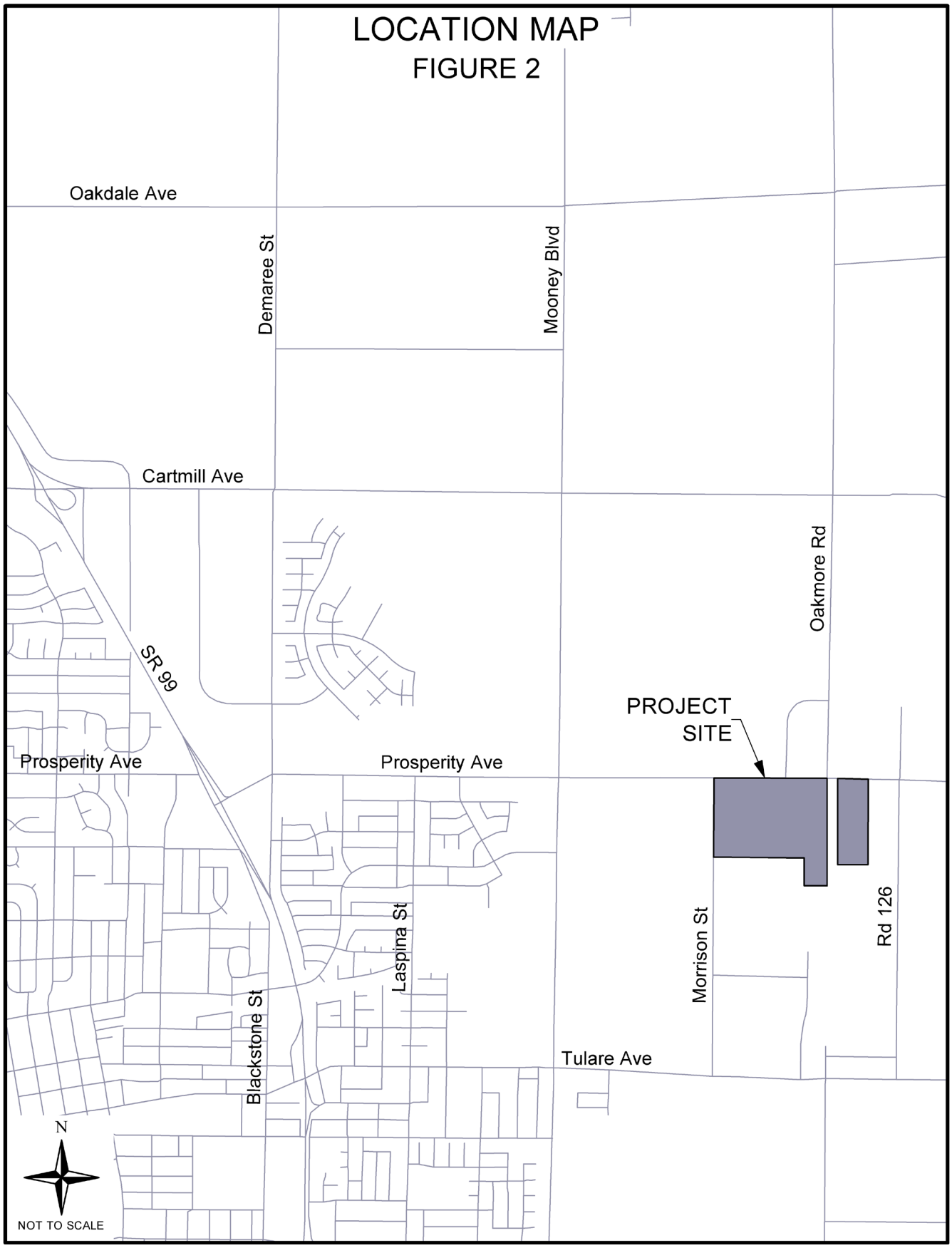
B. Existing Site Uses and Site Access

The site is currently used for agricultural production. As currently planned, access to the proposed development would be provided along Morrison Street, Prosperity Avenue, and Oakmore Road.

C. Existing Uses in Vicinity of the Site

The site is bounded by Prosperity Avenue to the north, Morrison Street to the west, with Oakmore Road dissecting the project. Residential land uses exist to the north and generally south of the site, with agricultural land uses to the immediate east, west, and south of the site.


VICINITY MAP
FIGURE 1
CITY OF DINUBA
SR 99
CITY OF VISALIA
SR 198
PROJECT
SITE
SR 137
CITY OF TULARE
SR 65
SR 190
CITY OF PORTERVILLE
N
NOT TO SCALE


LOCATION MAP
FIGURE 2
Oakdale Ave
Demaree St
Mooney Blvd
Cartmill Ave
SR 99
Oakmore Rd
PROJECT SITE
Prosperity Ave
Prosperity Ave
Laspina St
Morrison St
Rd 126
Blackstone St
Tulare Ave
N
NOT TO SCALE

LAGOMARSINO LAND USE EXHIBIT

SITE PLAN
FIGURE 3

	Acers	Dencity	Lot Count	Years of Constuction	
32' x 95' Lots	11.4	9.8	111	2.3	5.6
50' x 100' Lots	34.1	4.8	163	3.3	
60' x 110' Lots	63.1	3.8	239	4.9	4.9
1/2 Acer Lots	6.2	2	12	0.2	
Park/Pond	10				
Neighborhood Commersial	5				
Misc.	10.52				
Total:	140.32		525	6.8	

San Joaquin Valley HOMES

D. Roadway Descriptions

Blackstone Street is a primarily north-south arterial that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access from State Route 99 as well as commercial land uses.

Cartmill Avenue is an east-west major arterial that extends throughout the northern part of the city of Tulare. In the vicinity of the project, it exists as a two- to four-lane roadway and provides access to agricultural and residential land uses.

Hillman Street is a north-south major arterial north of Prosperity Avenue and collector south of Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a three- to six-lane roadway and provides access to agricultural, commercial, and residential land uses.

Laspina Street is a north-south arterial that extends south from Rosa Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to commercial and residential land uses.

Mooney Boulevard is a north-south major arterial that extends throughout the center of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

Morrison Street is a north-south collector that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Oakmore Road is a north-south arterial that extends north from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Prosperity Avenue is an east-west arterial that extends throughout the center of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, industrial, and residential land uses.

Seminole Avenue is an east-west local roadway that extends from Mooney Boulevard to Spyglass Street in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to residential land uses.

State Route 99 is a primarily north-south highway that extends throughout the state of California. In the vicinity of the project, it exists as a four-lane highway and provides access to Blackstone Street, Hillman Street, Tulare Avenue, and Bardsley Avenue.

Tulare Avenue is an east-west major arterial that extends throughout the southern portion of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

PROJECT TRIP GENERATION

The trip generation volumes for the mixed use development were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition. Trip generation and design hour volumes for all land uses are shown in Table 1.

The ADT, AM and PM peak hour rate equations, and peak hour directional splits for ITE Land Use Codes 210 (Single-Family Detached Housing) and 821 (Shopping Plaza 40-150k) were used to estimate the project traffic.

Table 1
Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	524 Dwelling Units	eq	4631	eq	25% 84	75% 252	eq	63% 297	37% 174
821	Shopping Plaza (40-150k)	50 1000 sq ft GLA	eq	5261	eq	62% 109	38% 68	eq	48% 241	52% 261
sub-total				9,892		109	68		241	261
Adjustments Pass-by		15%		789		16	10		36	39
Total				8,608		88	55		193	209

TRIP DISTRIBUTION AND ASSIGNMENT

The project trip distribution in Table 2 represents the most likely travel routes for traffic accessing the project. Project traffic distribution was estimated based on a review of the potential draw from population centers within the region and the types of land uses involved. These assumptions were used to distribute project traffic as shown in Figure 4.

Table 2
Project Trip Distribution

Direction	Percent
North	10
East	5
South	45
West	40

EXISTING AND FUTURE TRAFFIC

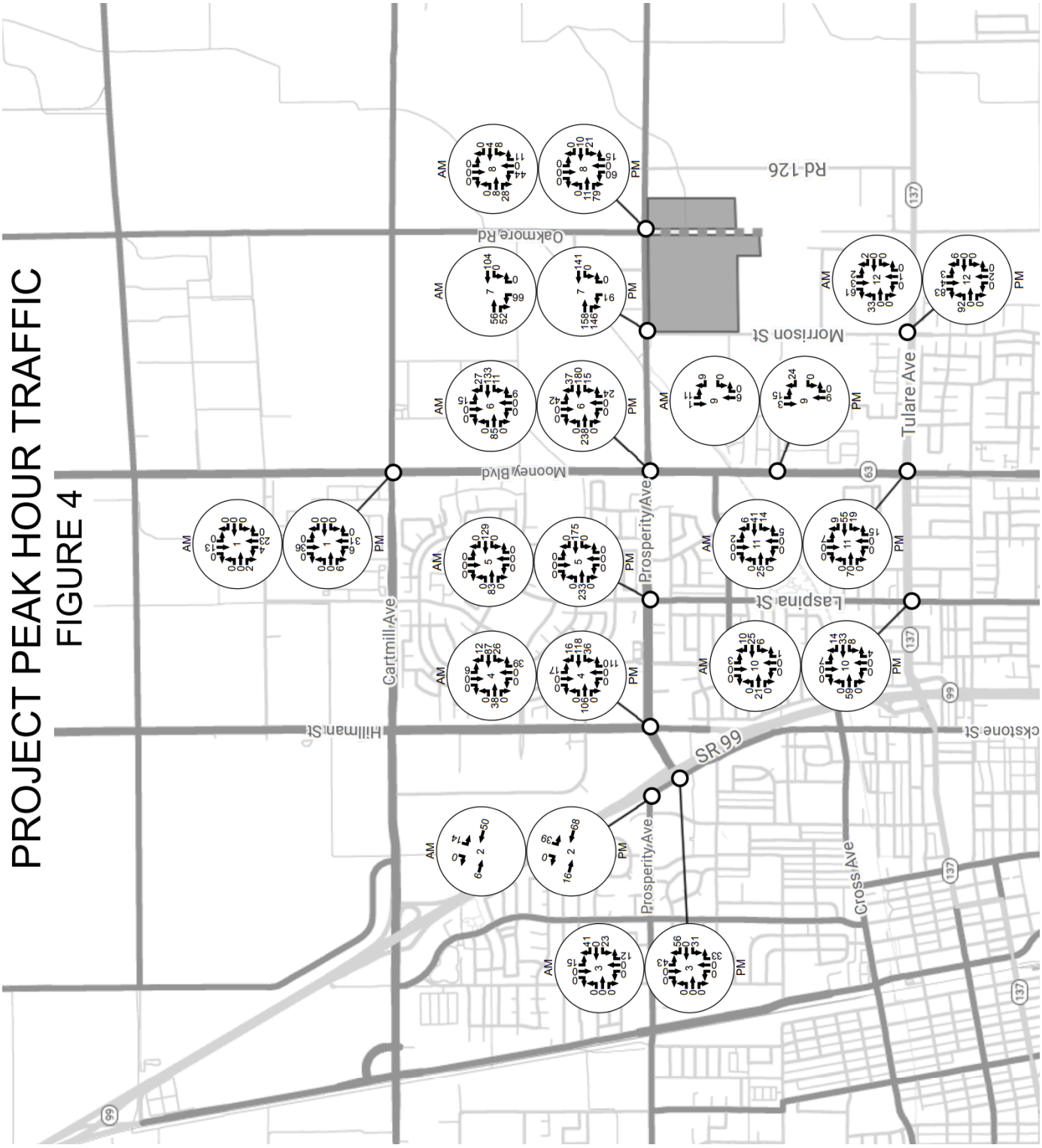
Weekday peak hour turning movements were counted at the following intersections in January and February 2024 (see Appendix for count data).

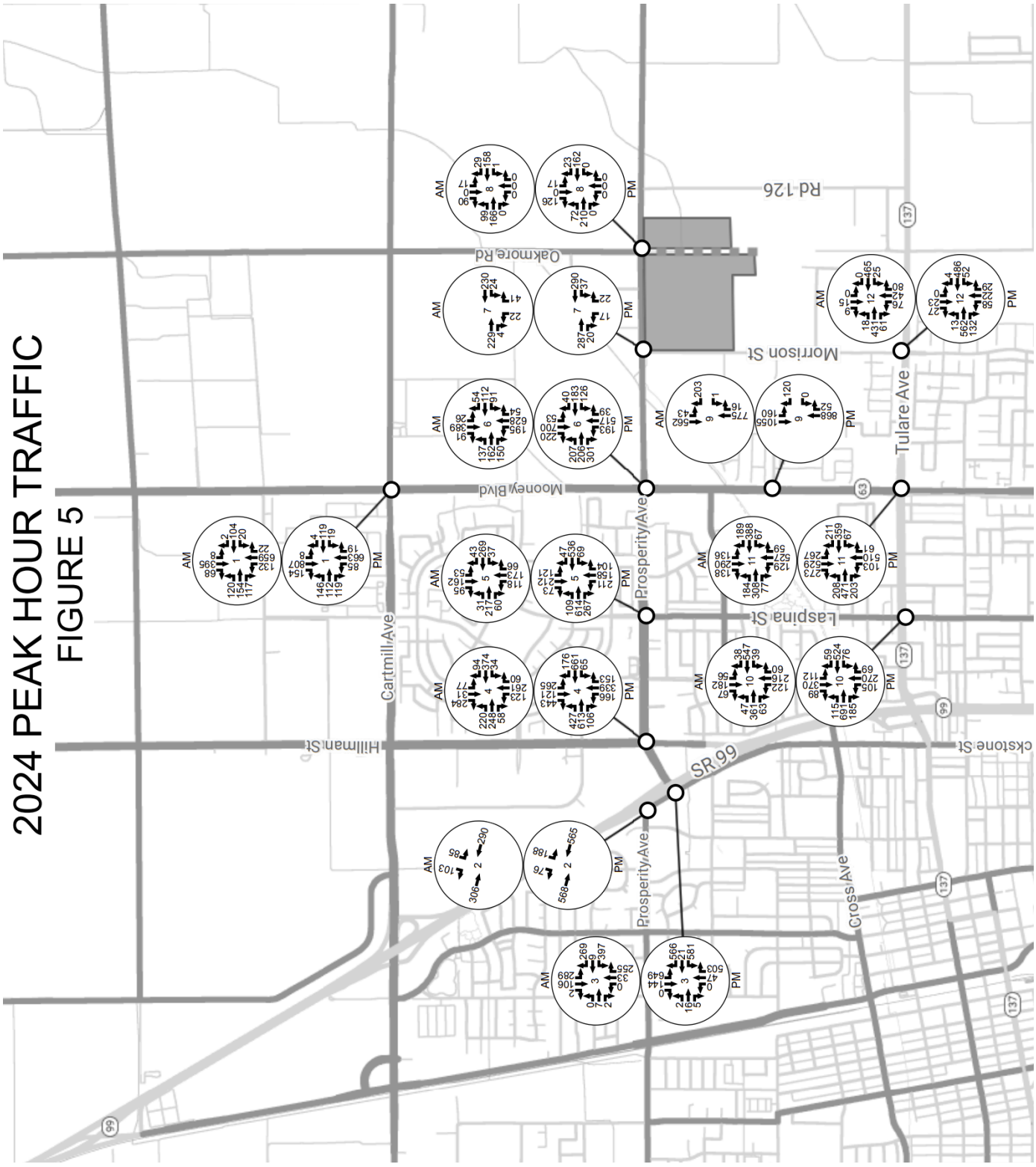
- Mooney Boulevard & Cartmill Avenue
- Prosperity Avenue & State Route 99 Southbound Offramp
- Prosperity Avenue & Blackstone Street
- Prosperity Avenue & Hillman Street
- Prosperity Avenue & Laspina St
- Prosperity Avenue & Mooney Boulevard
- Prosperity Avenue & Morrison Street
- Prosperity Avenue & Oakmore Street
- Tulare Avenue & Laspina Street
- Tulare Avenue & Mooney Boulevard
- Tulare Avenue & Morrison Street
- Seminole Avenue & Mooney Boulevard

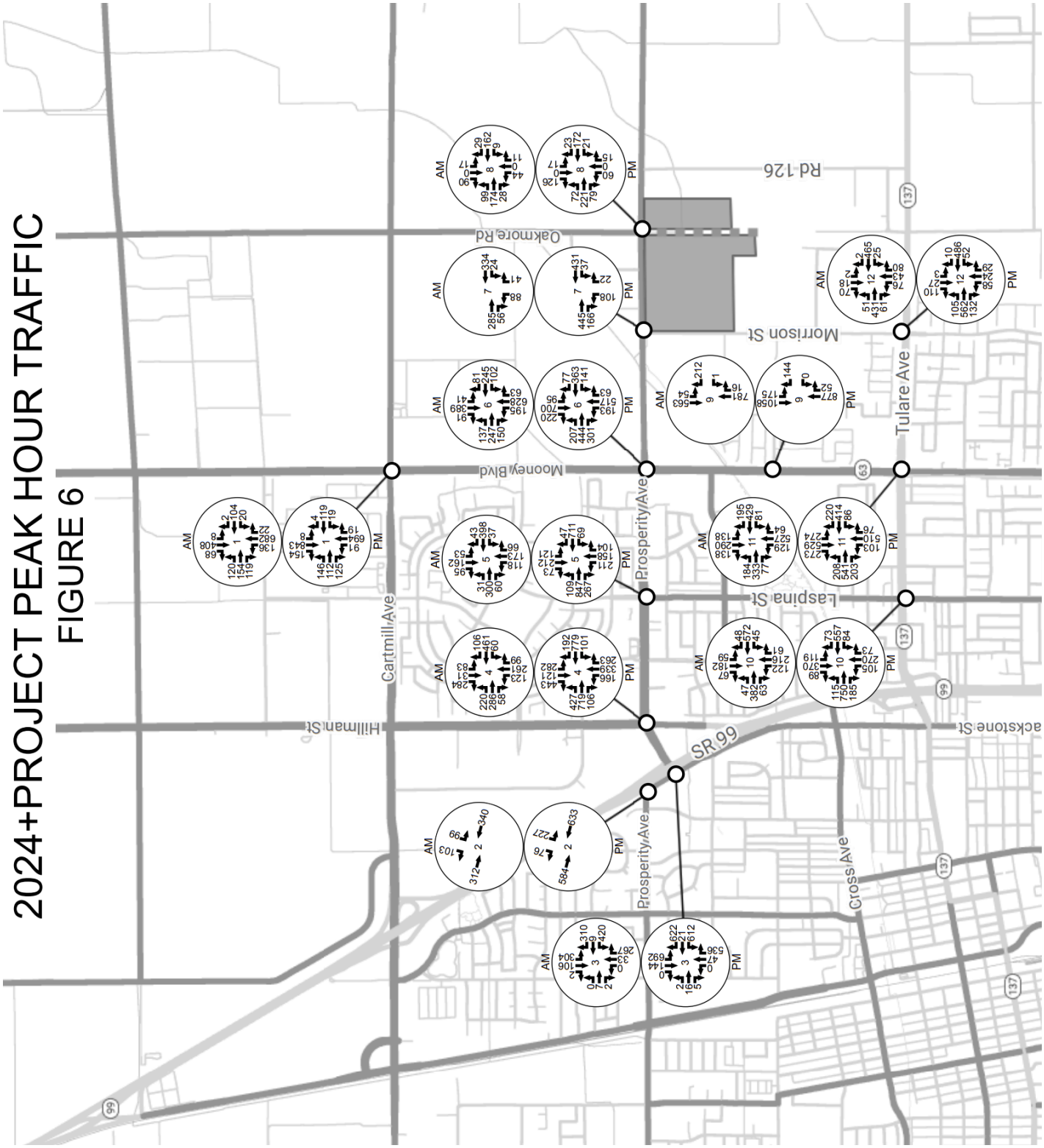
Traffic counts were conducted between the hours 6:00 to 8:00 AM and 4:00 to 6:00 PM. AM Peak Hour was determined to be 7:00 to 8:00 AM and 4:30 to 5:30 PM and are shown in Figure 5. The scope of

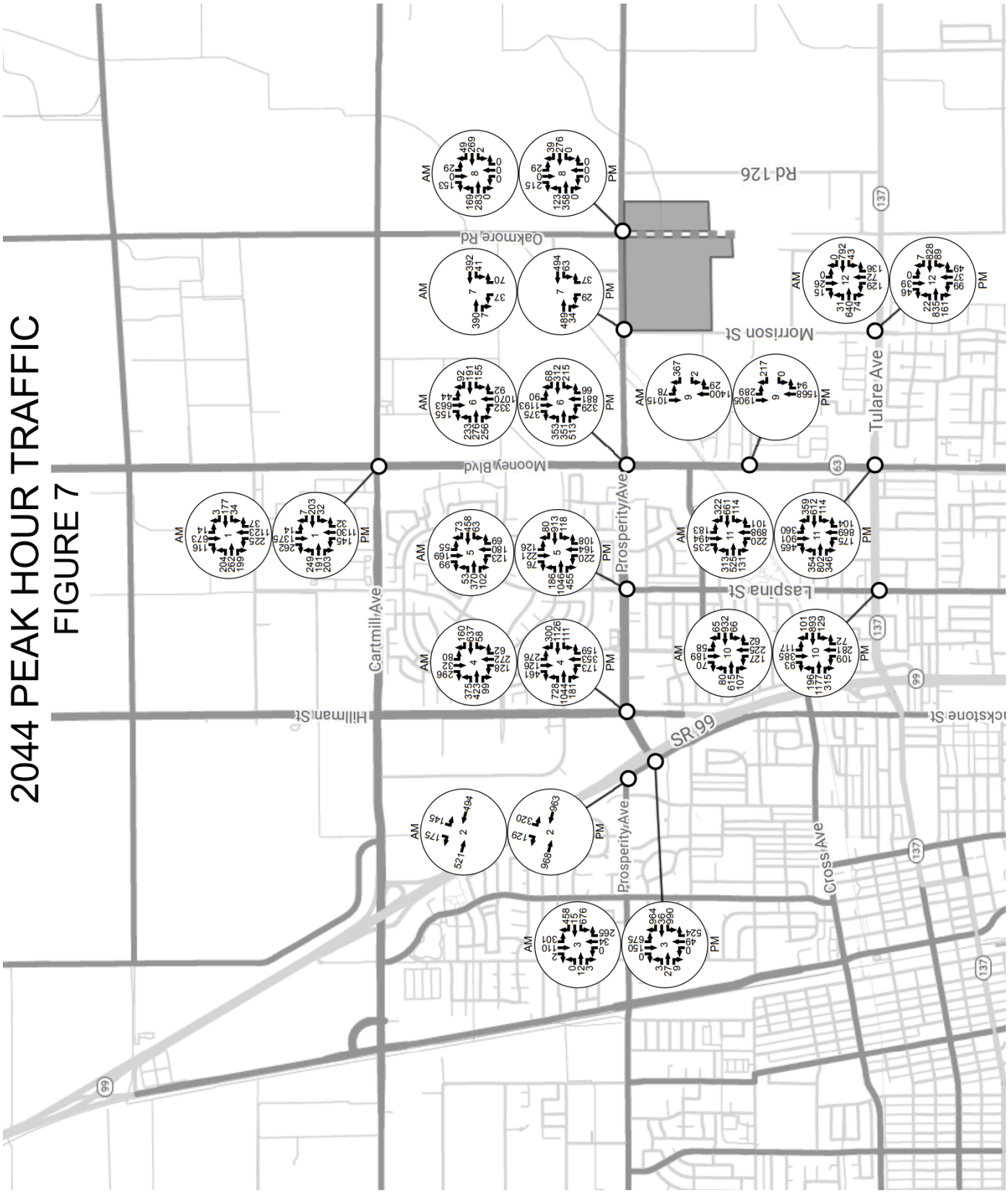
intersections was approved by the City of Tulare Public Works Department. Existing + Project peak hour volumes are shown in Figure 6.

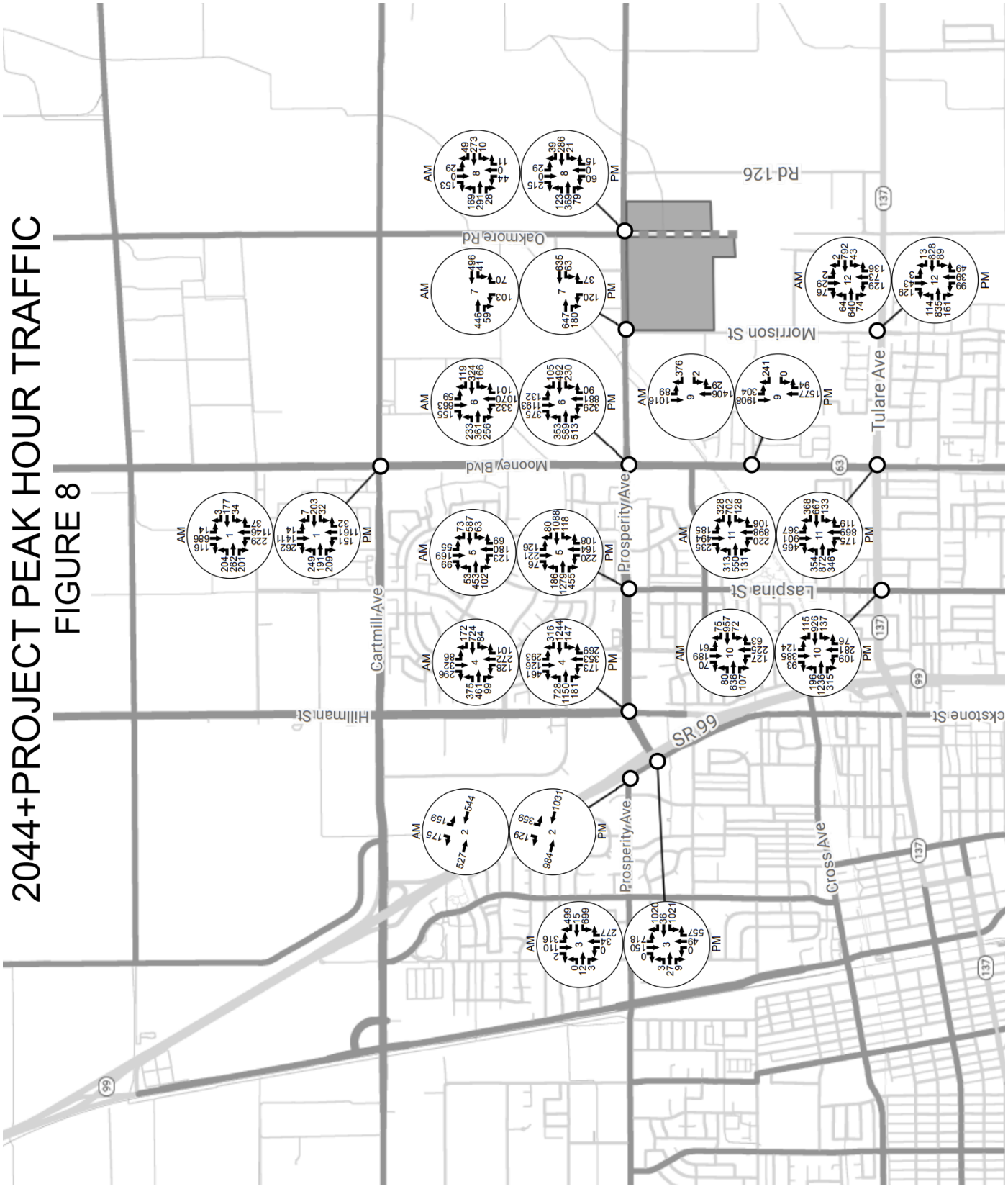
Annual growth rates ranging between 0.2% and 2.7% were applied to existing traffic volumes to estimate future traffic volumes for the year 2044. These growth rates were estimated based on TCAG traffic model data. Future peak hour volumes are shown in Figures 7 and 8.


PROJECT PEAK HOUR TRAFFIC
FIGURE 4
Rd 126
Oakmore Rd
Morrison St
Tulare Ave
Moone y Blvd
Prosperity Ave
Laspina St
Cartmill Ave
Hillman St
SR 99
ckstone St
Cross Ave
AM
PM


2024 PEAK HOUR TRAFFIC
FIGURE 5
Rd 126
Oakmore Rd
Morrison St
Tulare Ave
Mooney Blvd
Prosperity Ave
Cartmill Ave
Hillman St
Laspina St
SR 99
Cross Ave
AM
PM


2024+PROJECT PEAK HOUR TRAFFIC
FIGURE 6
Rd 126
Oakmore Rd
Morrison St
Tulare Ave
Moony Blvd
Prosperity Ave
Lasgina St
Cartmill Ave
Hillman St
SR 99
Cross Ave
AM
PM


2044 PEAK HOUR TRAFFIC
FIGURE 7
Rd 126
Oakmore Rd
Morrison St
Tulare Ave
Mooney Blvd
Prosperity Ave
Laspina St
Cartmill Ave
Hillman St
SR 99
Cross Ave
AM
PM


2044+PROJECT PEAK HOUR TRAFFIC
FIGURE 8
Rd 126
Oakmore Rd
Morrison St
Tulare Ave
Mooney Blvd
Prosperity Ave
Laspina St
Cartmill Ave
Hillman St
SR 99
Cross Ave
AM
PM

INTERSECTION ANALYSIS

A capacity analysis of the study intersections was conducted using Synchro software from Trafficware.

- Existing (2024)
- Existing (2024) + Project
- Future Cumulative (2044)
- Future Cumulative (2044) + Project

Criteria for intersection level of service (LOS) are shown in the tables below.

LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTION

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

LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Volume/Capacity	Control Delay (sec/veh)	Level of Service
< 0.60	≤ 10	A
0.61 - 0.70	> 10 and ≤ 20	B
0.71 - 0.80	> 20 and ≤ 35	C
0.81 - 0.90	> 35 and ≤ 55	D
0.91 - 1.00	> 55 and ≤ 80	E
> 1.0	> 80	F

Level of service for the study intersections is presented in Tables 3a and 3b. The level of service goal for roadway facilities in the City of Tulare is LOS "D."

Table 3a
PM Intersection Level of Service

#	Intersection	Control Type	2024	2024+ Project	2044	2044+ Project	2044+ Project w/Mitigation[1]
1	Mooney Blvd & Cartmill Ave	Signal	C	C	E (72.9)	F (82.0)	D
2	Prosperity Ave/Blackstone St & SR 99 Offramp	Signal	A	A	A	A	-
3	Blackstone St & Prosperity Ave	Signal	F (127.0)	F (158.9)	F (249.0)	F (255.1)	-[2]
4	Hillman St & Prosperity Ave	Signal	D	D	F (88.2)	F (104.0)	-[2]
5	Laspina St & Prosperity Ave	Signal	C	C	D	D	-
6	Mooney Blvd & Prosperity Ave	Signal	C	D	F (126.2)	F (146.0)	D
7	Morrison St & Prosperity Ave	NB SB	B -	D (32.1) A	C -	F (188.5) B	-
		Signal	-	-	-	-	B
8	Prosperity Ave & Oakmore Rd	SB	B	B	C	C	-
9	Mooney Blvd & Seminole Ave	WB	B	B	E (48.6)	F (62.2)	-
		Signal	-	-	-	-	C
10	Laspina St & Tulare Ave	Signal	C	C	D	D	-
11	Mooney Blvd & Tulare Ave	Signal	C	C	F (137.9)	F (143.0)	-[2]
12	Morrison St & Tulare Ave	NB SB	F (56.4) D (27.6)	F (226.1) E (41.1)	-	-	-
		Roundabout	-	-	D	E (46.4)	C

[1]Mitigation shown in Table 6

[2]No feasible mitigation

Table 3b
AM Intersection Level of Service

#	Intersection	Control Type	2024	2024+ Project	2044	2044+ Project	2044+ Project w/Mitigation[1]
1	Mooney Blvd & Cartmill Ave	Signal	B	B	C	C	C
2	Prosperity Ave/Blackstone St & SR 99 Offramp	Signal	A	A	A	A	-
3	Blackstone St & Prosperity Ave	Signal	B	B	C	D	-
4	Hillman St & Prosperity Ave	Signal	B	B	C	C	-
5	Laspina St & Prosperity Ave	Signal	B	B	B	B	-
6	Mooney Blvd & Prosperity Ave	Signal	C	C	D	E (58.4)	C
7	Morrison St & Prosperity Ave	NB SB	B -	C A	C -	E (37.2) A	-
		Signal	-	-	-	-	B
8	Prosperity Ave & Oakmore Rd	SB	B	B	C	C	-
9	Mooney Blvd & Seminole Ave	WB	B	C	F (128.4)	F (141.0)	-
		Signal	-	-	-	-	C
10	Laspina St & Tulare Ave	Signal	B	B	C	C	-
11	Mooney Blvd & Tulare Ave	Signal	C	C	E (68.0)	E (72.6)	-[2]
12	Morrison St & Tulare Ave	NB SB	D C	F (65.5) C	-	-	-
		Roundabout	-	-	C	C	C[3]

[1]Mitigation shown in Table 6
[2]No feasible mitigation
[3]Mitigation necessary due to PM Peak Hour

TRAFFIC SIGNAL WARRANT ANALYSIS

Peak hour signal warrants were evaluated for the unsignalized intersection within the study based on the California Manual on Uniform Traffic Control Devices (MUTCD). Peak hour signal warrants assess delay to traffic on the minor street approaches when entering or crossing a major street. Signal warrant analysis results for PM & AM peak hour are shown in Tables 4a and 4b, respectively.

Table 4a
PM Traffic Signal Warrants

		2024			2024+Project			2044			2044+Project		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	634	39	NO	1079	130	YES	1080	66	NO	1525	157	YES
8	Oakmore Rd at Prosperity Ave	467	143	NO	588	143	NO	796	244	YES	917	244	YES
9	Mooney Blvd at Seminole Ave	2135	120	YES	2162	144	YES	3856	217	YES	3883	241	YES
12	Morrison St at Tulare Ave	1249	109	YES	1347	140	YES	2129	185	YES	2227	187	YES

Table 4b
AM Traffic Signal Warrants

		2024			2024+Project			2044			2044+Project		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	487	63	NO	699	129	NO	830	107	NO	1042	173	YES
8	Oakmore Rd at Prosperity Ave	453	107	NO	501	107	NO	772	182	YES	820	182	YES
9	Mooney Blvd at Seminole Ave	1398	204	YES	1416	213	YES	2526	369	YES	2544	378	YES
12	Morrison St at Tulare Ave	1000	198	YES	1035	199	YES	1704	337	YES	1739	338	YES

It is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered in order to determine whether signals are truly justified.

It is also noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above an acceptable level of service or operate below an acceptable level of service and not meet signal warrant criteria.

ROADWAY ANALYSIS

A capacity analysis of the study roadways was conducted using Table 4 in the State of Florida Department of Transportation *Quality/Level of Service Handbook* dated June 2020 (see Appendix). The level of service goal within the study limits is LOS "D". The analysis was performed for the following AM and PM traffic scenarios:

- Existing (2024)
- Existing (2024) + Project
- Future Cumulative (2044)
- Future Cumulative (2044) + Project

Table 5a
PM Roadway Level of Service

Roadway Segment	2024 Two-Way LOS		2024+Project Two-Way LOS		2044 Two-Way LOS		2044+Project Two-Way LOS	
	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS
Blackstone St: SR 99 SB Offramp - Prosperity Ave	1408	C	1531	C	2251	C	2374	C
Prosperity Ave: Blackstone St - Hillman St	2416	C	2640	C	3713	D	3937	D
Prosperity Ave : Hillman St - Laspina St	1933	C	2341	C	3016	C	3424	C
Prosperity Ave: Laspina St - Mooney Blvd	1491	C	1909	C	2391	C	2809	C
Prosperity Ave: Mooney Blvd - Morrison St	647	C	1183	C	1102	C	1638	C
Prosperity Ave: Morrison St - Oakmore Rd	636	C	935	C	1083	C	1382	C
Morrison St: Prosperity Ave - Tulare Ave	96	C	333	C	151	C	388	C
Mooney Blvd: Cartmill Ave - Prosperity Ave	1737	C	1816	C	2960	C	3039	C
Mooney Blvd: Prosperity Ave - Seminole Ave	1876	C	1915	C	3467	D	3506	D
Mooney Blvd: Seminole Ave - Tulare Ave	1998	C	2014	C	3467	D	3483	D
Laspina St: Prosperity Ave - Tulare Ave	1998	C	2019	C	1286	C	1307	C
Tulare Ave: Laspina St - Mooney Blvd	1617	C	1742	C	2754	C	2879	C
Tulare Ave: Mooney Blvd - Morrison St	1436	C	1611	C	2446	C	2621	C

Table 5b
AM Roadway Level of Service

Roadway Segment	2024 Two-Way LOS		2024+Project Two-Way LOS		2044 Two-Way LOS		2044+Project Two-Way LOS	
	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS
Blackstone St: SR 99 SB Offramp - Prosperity Ave	699	C	769	C	1160	C	1230	C
Prosperity Ave: Blackstone St - Hillman St	1307	C	1432	C	1958	C	2083	C
Prosperity Ave : Hillman St - Laspina St	887	C	1099	C	1420	C	1632	C
Prosperity Ave: Laspina St - Mooney Blvd	847	C	1065	C	1443	C	1661	C
Prosperity Ave: Mooney Blvd - Morrison St	499	C	779	C	850	C	1130	C
Prosperity Ave: Morrison St - Oakmore Rd	524	C	684	C	893	C	1053	C
Morrison St: Prosperity Ave - Tulare Ave	91	C	209	C	163	C	281	C
Mooney Blvd: Cartmill Ave - Prosperity Ave	1336	C	1378	C	2291	C	2333	C
Mooney Blvd: Prosperity Ave - Seminole Ave	1345	C	1372	C	2860	C	2887	C
Mooney Blvd: Seminole Ave - Tulare Ave	1507	C	1515	C	2450	C	2458	C
Laspina St: Prosperity Ave - Tulare Ave	616	C	629	C	1286	C	1299	C
Tulare Ave: Laspina St - Mooney Blvd	1224	C	1290	C	2085	C	2151	C
Tulare Ave: Mooney Blvd - Morrison St	1147	C	1241	C	1955	C	2049	C

IMPROVEMENTS

Intersection improvements needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the project are presented in Table 6.

Table 6
Future Intersection Improvements

#	Intersection	Total Improvements Required by 2044	Project Percent Share
1	Mooney Blvd & Cartmill Ave	Add NBT, SBT	4.74%
6	Mooney Blvd & Prosperity Ave	Add NBT, NBL, SBT, SBL EBT, EBL, WBT, WBL	21.47%
7	Morrison St & Prosperity Ave	Signal	53.12%
9	Mooney Blvd & Seminole Ave	Signal	2.73%
12	Morrison St & Tulare Ave	Add EBR	19.11%

Project percent share is calculated using the following formula:

$$\% \text{ Share} = \frac{\text{Project Traffic}}{\text{(Future+Project Traffic) - Existing Traffic}} \times 100\%$$

VMT ANALYSIS

An analysis of project VMT (vehicle miles traveled) was conducted in accordance with *Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743*, a City of Tulare memorandum, dated June 26, 2020 (VMT Guidelines).

Mixed-Use Projects

The project includes both residential and commercial land uses. According to the VMT Guidelines, a land development with mixed uses may be analyzed either based on individual project land uses or the project's dominant land use. The former approach was taken for the purposes of this study since, based on the daily project trip generation estimates presented in Table 1, neither project land use is considered to be dominant.

Project Screening

The VMT Guidelines contain "screening thresholds" for identifying whether a land use project should be expected to result in a less than significant transportation impact under the California Environmental Quality Act (CEQA). Projects meeting one or more of these screening criteria are presumed to generate insignificant levels of VMT and would not be required to undergo a detailed VMT analysis.

One screening threshold applies to residential projects located in low VMT areas. The VMT Guidelines include a map generated by the TCAG regional travel model that identifies which areas satisfy the City's VMT "reduction target" (at least 15 percent below the regional average). Since the project is shown to be in a low VMT area (see Appendix for map), the residential portion of the project is presumed to create a less than significant transportation impact.

A second screening threshold relates to local-serving retail projects. The commercial portion of the project would be zoned as a "neighborhood commercial district" which, as defined in Section 10.44.020 of the *City of Tulare, California, Code of Ordinances, 2023 S-32 Supplement,* includes "a limited range of commercial uses that cater to the daily needs of residents." Permitted land uses, including bank, medical office, dry cleaner, donut shop, garden supply, sporting goods, etc., would satisfy the local-serving screening criterion since such developments typically provide more proximate retail destinations, effectively reducing VMT by shortening trip lengths. Therefore, the commercial portion of the project is presumed to create a less than significant transportation impact.

SUMMARY AND CONCLUSIONS

The purpose of this study is to evaluate the potential traffic impacts of a proposed mixed-use development located on the south side of Prosperity Avenue east of Morrison Street in Tulare, CA. The study included both level of service (LOS) and vehicle miles traveled (VMT) analyses.

Level of Service Analysis

The intersections of Blackstone Street & Prosperity Avenue and Morrison Street & Tulare Avenue currently operates below an acceptable level of service. With the addition of project traffic, the intersection of Morrison Street & Prosperity Avenue is anticipated to operate below an acceptable level of service.

In 2044, the intersections of Mooney Boulevard & Cartmill Avenue, Hillman Street & Prosperity Avenue, Mooney Boulevard & Seminole Avenue, and Mooney Boulevard & Tulare Avenue are anticipated to operate below an acceptable level of service prior to the addition of project traffic. With the addition of project traffic, the intersection of Morrison Street & Prosperity Avenue is anticipated to operate below an acceptable level of service.

All remaining intersections operate at an acceptable level of service in 2024 through 2044 prior to, and with the addition of project traffic.

Proposed improvements to improve the operational level of service are shown in Table 6. Due to right of way constraints, there is no feasible mitigation measures for the intersections of Blackstone Street & Prosperity Avenue, Hillman Street & Prosperity Avenue, and Mooney Boulevard & Tulare Avenue.

Roadway Capacity

All roadway segments within the scope of the study currently operate at or above LOS D and are expected to continue to do so through the year 2044, both with and without the project. Therefore, no improvements are required.

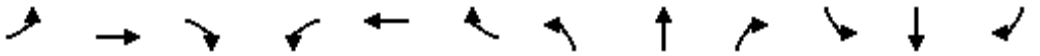
VMT

The project meets VMT screening criteria, and therefore, is presumed to have a less than significant transportation impact under CEQA.

REFERENCES

1. Annual Traffic Census, TCAG
2. City of Tulare, California, Code of Ordinances, 2023 S-32 Supplement
3. Kern County General Plan, approved September 22, 2009
4. Highway Capacity Manual, Special Report 209, Transportation Research Board
5. Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743, City of Tulare memorandum, dated June 26, 2020
6. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2014 Edition, Federal Highway Administration (FHA)
7. Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE)
8. Tulare General Plan, adopted October 7, 2014

APPENDIX

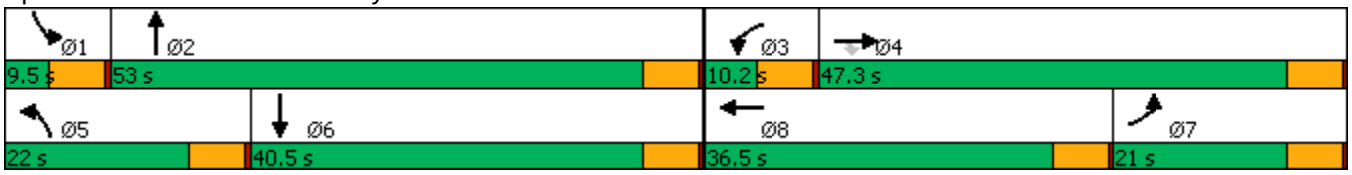


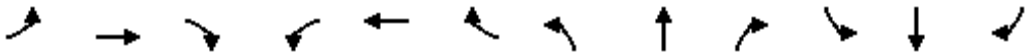
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	112	119	19	119	4	85	663	19	8	807	154
Future Volume (vph)	146	112	119	19	119	4	85	663	19	8	807	154
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			19	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	122	129	21	129	4	92	721	21	9	877	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	122	129	21	133	0	92	742	0	9	1044	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	47.3	47.3	10.2	36.5		22.0	53.0		9.5	40.5	
Total Split (%)	17.5%	39.4%	39.4%	8.5%	30.4%		18.3%	44.2%		7.9%	33.8%	
Maximum Green (s)	15.5	41.8	41.8	4.7	31.0		16.5	47.5		4.0	35.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	15.1	31.6	31.6	6.5	15.8		12.4	48.1		5.7	36.6	
Actuated g/C Ratio	0.16	0.34	0.34	0.07	0.17		0.13	0.52		0.06	0.39	
v/c Ratio	0.60	0.19	0.22	0.19	0.42		0.42	0.41		0.09	0.77	
Control Delay	50.7	25.8	2.3	52.5	40.3		47.7	16.3		51.9	31.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.7	25.8	2.3	52.5	40.3		47.7	16.3		51.9	31.9	
LOS	D	C	A	D	D		D	B		D	C	
Approach Delay		28.1			41.9			19.8			32.0	
Approach LOS		C			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 93			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

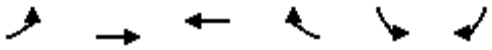




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	112	119	19	119	4	85	663	19	8	807	154
Future Volume (veh/h)	146	112	119	19	119	4	85	663	19	8	807	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	159	122	129	21	129	4	92	721	21	9	877	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	475	363	67	278	9	151	1557	45	51	1128	215
Arrive On Green	0.14	0.25	0.25	0.04	0.15	0.13	0.09	0.44	0.42	0.03	0.38	0.36
Sat Flow, veh/h	1641	1870	1431	1641	1803	56	1641	3523	103	1641	2962	564
Grp Volume(v), veh/h	159	122	129	21	0	133	92	364	378	9	526	518
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1859	1641	1777	1848	1641	1777	1749
Q Serve(g_s), s	6.4	3.6	5.1	0.9	0.0	4.5	3.7	9.9	9.9	0.4	17.9	18.0
Cycle Q Clear(g_c), s	6.4	3.6	5.1	0.9	0.0	4.5	3.7	9.9	9.9	0.4	17.9	18.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	231	475	363	67	0	286	151	785	817	51	676	666
V/C Ratio(X)	0.69	0.26	0.36	0.31	0.00	0.46	0.61	0.46	0.46	0.18	0.78	0.78
Avail Cap(c_a), veh/h	405	1175	899	148	0	876	429	1263	1314	131	941	926
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	20.5	21.1	32.1	0.0	26.6	30.1	13.5	13.5	32.5	18.8	19.0
Incr Delay (d2), s/veh	3.6	0.3	0.6	2.6	0.0	1.2	3.9	0.4	0.4	1.6	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.4	1.5	0.4	0.0	1.8	1.5	3.1	3.3	0.2	6.4	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	20.8	21.7	34.7	0.0	27.8	34.0	13.9	13.9	34.2	21.6	21.9
LnGrp LOS	C	C	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h		410			154			834			1053	
Approach Delay, s/veh		25.3			28.7			16.1			21.8	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	34.5	6.8	21.5	10.4	30.2	13.7	14.6
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.0	47.5	4.7	41.8	16.5	35.0	15.5	31.0
Max Q Clear Time (g_c+I1), s	2.4	11.9	2.9	7.1	5.7	20.0	8.4	6.5
Green Ext Time (p_c), s	0.0	2.8	0.0	0.9	0.2	3.8	0.3	0.4

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

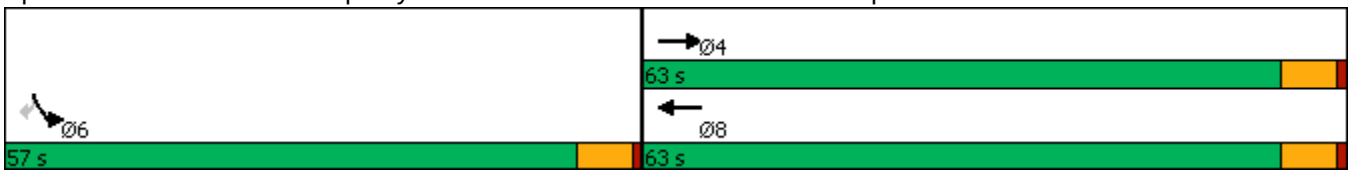


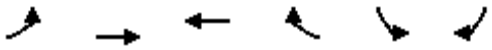
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	568	565	0	188	76
Future Volume (vph)	0	568	565	0	188	76
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						83
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	617	614	0	204	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	617	614	0	204	83
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		63.0	63.0		57.0	57.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		57.0	57.0		51.0	51.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		14.2	14.2		12.5	12.5
Actuated g/C Ratio		0.41	0.41		0.36	0.36
v/c Ratio		0.43	0.43		0.35	0.14
Control Delay		8.8	8.8		10.7	3.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.8	8.8		10.7	3.5
LOS		A	A		B	A
Approach Delay		8.8	8.8		8.6	
Approach LOS		A	A		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 34.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

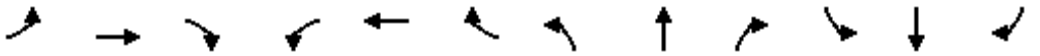




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	568	565	0	188	76
Future Volume (veh/h)	0	568	565	0	188	76
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	617	614	0	204	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1387	1387	0	488	434
Arrive On Green	0.00	0.39	0.39	0.00	0.30	0.30
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	617	614	0	204	83
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.3	3.3	0.0	2.6	1.1
Cycle Q Clear(g_c), s	0.0	3.3	3.3	0.0	2.6	1.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1387	1387	0	488	434
V/C Ratio(X)	0.00	0.44	0.44	0.00	0.42	0.19
Avail Cap(c_a), veh/h	0	8188	8188	0	3396	3022
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.8	5.8	0.0	7.2	6.7
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.0	6.0	0.0	7.8	6.9
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		617	614		287	
Approach Delay, s/veh		6.0	6.0		7.5	
Approach LOS		A	A		A	

Timer - Assigned Phs		4		6	8
Phs Duration (G+Y+Rc), s		14.0		11.6	14.0
Change Period (Y+Rc), s		6.0		6.0	6.0
Max Green Setting (Gmax), s		57.0		51.0	57.0
Max Q Clear Time (g_c+I1), s		5.3		4.6	5.3
Green Ext Time (p_c), s		2.7		1.1	2.7

Intersection Summary	
HCM 6th Ctrl Delay	6.3
HCM 6th LOS	A

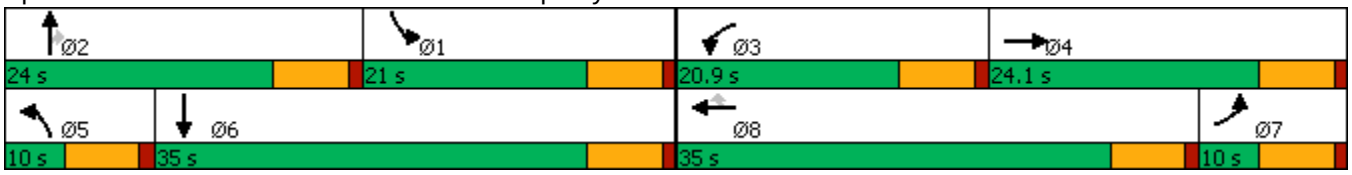


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	16	5	581	21	566	0	47	503	649	144	0
Future Volume (vph)	2	16	5	581	21	566	0	47	503	649	144	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.966				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1791	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.757					0.950		
Satd. Flow (perm)	1630	1791	0	1548	1340	1428	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				615			547			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	17	5	632	23	615	0	51	547	705	157	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	22	0	329	326	615	0	51	547	705	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		20.9	35.0	35.0	10.0	24.0	24.0	21.0	35.0	
Total Split (%)	11.1%	26.8%		23.2%	38.9%	38.9%	11.1%	26.7%	26.7%	23.3%	38.9%	
Maximum Green (s)	4.0	18.1		14.9	29.0	29.0	4.0	18.0	18.0	15.0	29.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.1	10.3		26.2	26.2	31.3		11.6	11.6	17.2	32.8	
Actuated g/C Ratio	0.08	0.14		0.35	0.35	0.42		0.16	0.16	0.23	0.44	
v/c Ratio	0.02	0.09		0.60	0.54	0.64		0.17	0.79	0.96	0.19	
Control Delay	36.0	24.4		31.9	29.4	5.4		28.4	12.4	55.9	13.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	36.0	24.4		31.9	29.4	5.4		28.4	12.4	55.9	13.5	
LOS	D	C		C	C	A		C	B	E	B	
Approach Delay		25.4			18.4			13.7			48.2	
Approach LOS		C			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.9			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 69.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave



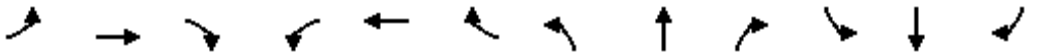
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	5	581	21	566	0	47	503	649	144	0
Future Volume (veh/h)	2	16	5	581	21	566	0	47	503	649	144	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	17	5	648	0	615	0	51	547	705	157	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	45	283	83	698	0	560	2	312	244	681	807	0
Arrive On Green	0.03	0.20	0.18	0.21	0.00	0.39	0.00	0.17	0.17	0.21	0.43	0.00
Sat Flow, veh/h	1641	1380	406	3281	0	1435	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	22	648	0	615	0	51	547	705	157	0
Grp Sat Flow(s),veh/h/ln	1641	0	1786	1641	0	1435	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	0.8	15.4	0.0	31.0	0.0	1.9	7.5	17.0	4.1	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.8	15.4	0.0	31.0	0.0	1.9	7.5	17.0	4.1	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	45	0	366	698	0	560	2	312	244	681	807	0
V/C Ratio(X)	0.04	0.00	0.06	0.93	0.00	1.10	0.00	0.16	2.24	1.04	0.19	0.00
Avail Cap(c_a), veh/h	124	0	452	698	0	560	124	471	368	681	807	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.6	0.0	25.6	30.7	0.0	24.2	0.0	28.3	10.5	31.2	14.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	18.7	0.0	67.6	0.0	0.2	572.5	43.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	7.2	0.0	19.2	0.0	0.8	42.6	9.9	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	0.0	25.7	49.4	0.0	91.8	0.0	28.6	583.0	75.1	14.1	0.0
LnGrp LOS	D	A	C	D	A	F	A	C	F	F	B	A
Approach Vol, veh/h		24			1263			598			862	
Approach Delay, s/veh		26.7			70.1			535.7			64.0	
Approach LOS		C			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	17.3	20.9	20.3	0.0	38.3	6.2	35.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	18.0	14.9	18.1	4.0	29.0	4.0	29.0
Max Q Clear Time (g_c+I1), s	10.9	9.5	17.4	2.8	0.0	6.1	2.1	33.0
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	0.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	169.1
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

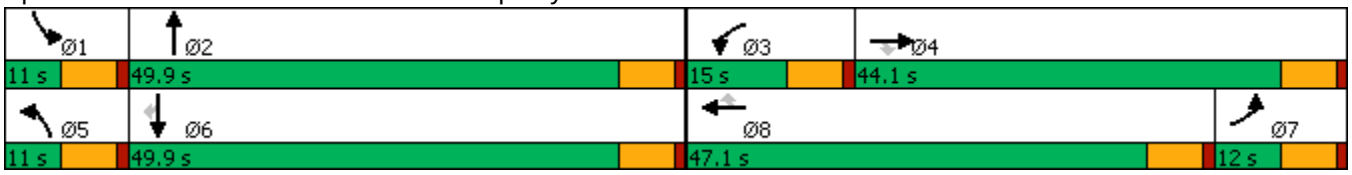


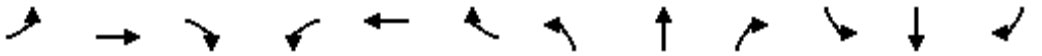
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	427	613	106	65	661	176	166	339	153	265	121	443
Future Volume (vph)	427	613	106	65	661	176	166	339	153	265	121	443
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3355	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3355	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			150		70				351
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	464	666	115	71	718	191	180	368	166	288	132	482
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	666	115	71	718	191	180	534	0	288	132	482
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	12.0	44.1	44.1	15.0	47.1	47.1	11.0	49.9		11.0	49.9	49.9
Total Split (%)	10.0%	36.8%	36.8%	12.5%	39.3%	39.3%	9.2%	41.6%		9.2%	41.6%	41.6%
Maximum Green (s)	6.0	38.1	38.1	9.0	41.1	41.1	5.0	43.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	11.6	26.3	26.3	10.4	21.8	21.8	7.4	21.6		7.4	21.6	21.6
Actuated g/C Ratio	0.15	0.33	0.33	0.13	0.27	0.27	0.09	0.27		0.09	0.27	0.27
v/c Ratio	1.01	0.57	0.21	0.33	0.51	0.38	1.18	0.55		0.98	0.26	0.52
Control Delay	80.1	26.4	4.3	42.5	25.9	9.6	168.4	23.6		87.7	24.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	80.1	26.4	4.3	42.5	25.9	9.6	168.4	23.6		87.7	24.6	9.0
LOS	F	C	A	D	C	A	F	C		F	C	A
Approach Delay		44.4			24.0			60.1			36.4	
Approach LOS		D			C			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 79.4			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 40.2		Intersection LOS: D	
Intersection Capacity Utilization 68.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: Hillman St & Prosperity Ave

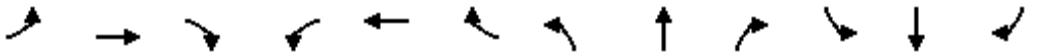




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	427	613	106	65	661	176	166	339	153	265	121	443
Future Volume (veh/h)	427	613	106	65	661	176	166	339	153	265	121	443
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	464	666	115	71	718	191	180	368	166	288	132	482
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	1104	440	135	1402	393	170	631	280	331	496	660
Arrive On Green	0.12	0.31	0.31	0.08	0.27	0.27	0.10	0.27	0.24	0.10	0.27	0.27
Sat Flow, veh/h	3183	3554	1416	1641	5106	1432	1641	2378	1054	3183	1870	2487
Grp Volume(v), veh/h	464	666	115	71	718	191	180	273	261	288	132	482
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1432	1641	1777	1655	1591	1870	1244
Q Serve(g_s), s	8.0	10.7	4.1	2.8	8.0	4.6	7.0	9.0	9.4	6.0	3.8	7.1
Cycle Q Clear(g_c), s	8.0	10.7	4.1	2.8	8.0	4.6	7.0	9.0	9.4	6.0	3.8	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	378	1104	440	135	1402	393	170	471	439	331	496	660
V/C Ratio(X)	1.23	0.60	0.26	0.52	0.51	0.49	1.06	0.58	0.59	0.87	0.27	0.73
Avail Cap(c_a), veh/h	378	2115	843	268	3266	916	170	1211	1128	331	1274	1695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	19.7	17.4	29.6	20.6	7.6	30.2	21.5	22.2	29.7	19.6	8.0
Incr Delay (d2), s/veh	123.7	0.5	0.3	3.1	0.3	0.9	84.5	1.1	1.3	21.4	0.3	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	3.7	1.1	1.1	2.7	2.0	6.4	3.3	3.3	3.0	1.4	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	153.4	20.2	17.7	32.8	20.9	8.6	114.7	22.6	23.5	51.1	19.8	9.6
LnGrp LOS	F	C	B	C	C	A	F	C	C	D	B	A
Approach Vol, veh/h		1245			980			714			902	
Approach Delay, s/veh		69.6			19.4			46.1			24.4	
Approach LOS		E			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	21.9	9.6	24.9	11.0	21.9	12.0	22.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	43.9	9.0	38.1	5.0	43.9	6.0	41.1
Max Q Clear Time (g_c+I1), s	8.0	11.4	4.8	12.7	9.0	9.1	10.0	10.0
Green Ext Time (p_c), s	0.0	2.0	0.0	3.4	0.0	3.0	0.0	4.2

Intersection Summary	
HCM 6th Ctrl Delay	41.8
HCM 6th LOS	D

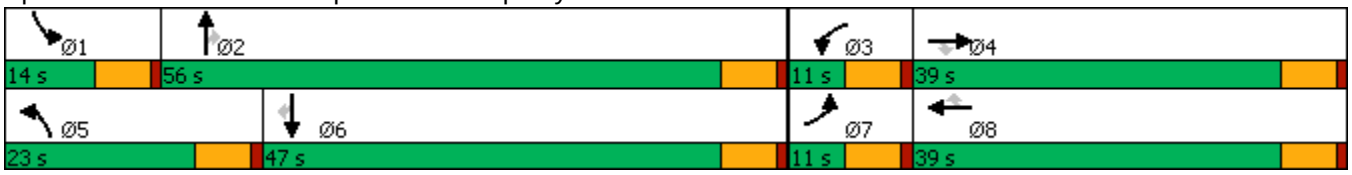


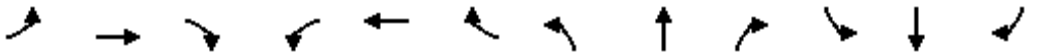
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	614	267	69	536	47	211	158	104	121	212	73
Future Volume (vph)	109	614	267	69	536	47	211	158	104	121	212	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1416	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			196			191			136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	667	290	75	583	51	229	172	113	132	230	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	667	290	75	583	51	229	172	113	132	230	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	11.0	39.0	39.0	11.0	39.0	39.0	23.0	56.0	56.0	14.0	47.0	47.0
Total Split (%)	9.2%	32.5%	32.5%	9.2%	32.5%	32.5%	19.2%	46.7%	46.7%	11.7%	39.2%	39.2%
Maximum Green (s)	5.0	33.0	33.0	5.0	33.0	33.0	17.0	50.0	50.0	8.0	41.0	41.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	7.2	24.8	24.8	7.2	24.8	24.8	18.6	29.1	29.1	10.4	20.8	20.8
Actuated g/C Ratio	0.08	0.28	0.28	0.08	0.28	0.28	0.21	0.33	0.33	0.12	0.24	0.24
v/c Ratio	0.88	0.67	0.54	0.56	0.41	0.10	0.66	0.28	0.20	0.69	0.52	0.16
Control Delay	97.3	32.7	14.1	61.3	27.4	0.4	46.0	23.0	3.2	61.4	34.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.3	32.7	14.1	61.3	27.4	0.4	46.0	23.0	3.2	61.4	34.0	0.7
LOS	F	C	B	E	C	A	D	C	A	E	C	A
Approach Delay		34.7			29.1			28.9			36.3	
Approach LOS		C			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 88			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 32.4		Intersection LOS: C	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Laspina St & Prosperity Ave

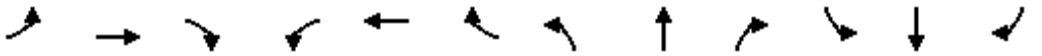




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	614	267	69	536	47	211	158	104	121	212	73
Future Volume (veh/h)	109	614	267	69	536	47	211	158	104	121	212	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	118	667	290	75	583	51	229	172	113	132	230	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1040	414	136	1431	396	310	528	399	204	406	311
Arrive On Green	0.10	0.29	0.29	0.08	0.28	0.28	0.19	0.28	0.28	0.12	0.22	0.22
Sat Flow, veh/h	1641	3554	1415	1641	5106	1414	1641	1870	1414	1641	1870	1430
Grp Volume(v), veh/h	118	667	290	75	583	51	229	172	113	132	230	79
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1702	1414	1641	1870	1414	1641	1870	1430
Q Serve(g_s), s	5.1	12.0	13.4	3.2	6.8	2.0	9.7	5.3	4.6	5.6	8.1	3.4
Cycle Q Clear(g_c), s	5.1	12.0	13.4	3.2	6.8	2.0	9.7	5.3	4.6	5.6	8.1	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	156	1040	414	136	1431	396	310	528	399	204	406	311
V/C Ratio(X)	0.75	0.64	0.70	0.55	0.41	0.13	0.74	0.33	0.28	0.65	0.57	0.25
Avail Cap(c_a), veh/h	156	1695	675	156	2435	674	425	1325	1002	224	1096	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	22.6	23.1	32.3	21.5	19.7	28.0	20.8	20.6	30.6	25.6	23.8
Incr Delay (d2), s/veh	18.6	0.7	2.2	3.4	0.2	0.1	4.4	0.4	0.4	5.6	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	4.4	4.0	1.3	2.4	0.6	3.7	2.1	1.3	2.3	3.3	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	23.3	25.3	35.8	21.7	19.9	32.4	21.2	20.9	36.2	26.9	24.2
LnGrp LOS	D	C	C	D	C	B	C	C	C	D	C	C
Approach Vol, veh/h		1075			709			514			441	
Approach Delay, s/veh		26.8			23.0			26.1			29.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	24.7	10.1	25.5	17.9	19.9	11.0	24.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	50.0	5.0	33.0	17.0	41.0	5.0	33.0
Max Q Clear Time (g_c+I1), s	7.1	7.3	5.2	15.4	11.7	10.1	7.1	8.8
Green Ext Time (p_c), s	0.0	1.0	0.0	3.9	0.3	1.1	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

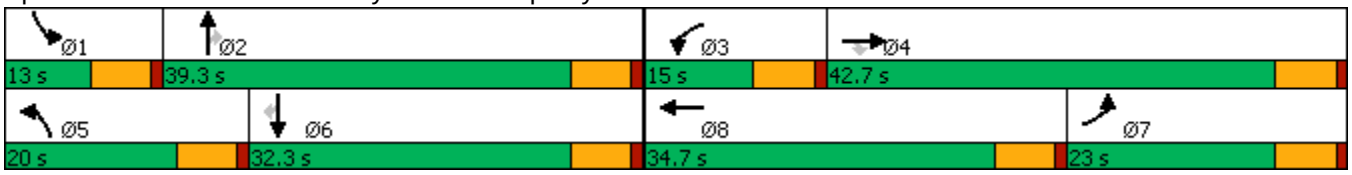


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	206	301	126	183	40	193	517	39	53	700	220
Future Volume (vph)	207	206	301	126	183	40	193	517	39	53	700	220
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1433	1630	1806	0	1630	3539	1410	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250		10				208			268
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	224	327	137	199	43	210	562	42	58	761	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	225	224	327	137	242	0	210	562	42	58	761	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	15.0	34.7		20.0	39.3	39.3	13.0	32.3	32.3
Total Split (%)	20.9%	38.8%	38.8%	13.6%	31.5%		18.2%	35.7%	35.7%	11.8%	29.4%	29.4%
Maximum Green (s)	17.0	36.7	36.7	9.0	28.7		14.0	33.3	33.3	7.0	26.3	26.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	18.3	27.1	27.1	11.1	19.9		16.0	36.3	36.3	8.8	26.2	26.2
Actuated g/C Ratio	0.19	0.28	0.28	0.11	0.21		0.17	0.38	0.38	0.09	0.27	0.27
v/c Ratio	0.73	0.43	0.56	0.73	0.64		0.78	0.42	0.06	0.39	0.79	0.41
Control Delay	53.4	30.9	11.5	67.5	42.2		62.1	25.9	0.2	53.4	40.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	30.9	11.5	67.5	42.2		62.1	25.9	0.2	53.4	40.7	4.9
LOS	D	C	B	E	D		E	C	A	D	D	A
Approach Delay		29.2			51.3			33.9			33.3	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 96.7			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 34.7		Intersection LOS: C	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	206	301	126	183	40	193	517	39	53	700	220
Future Volume (veh/h)	207	206	301	126	183	40	193	517	39	53	700	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	225	224	327	137	199	43	210	562	42	58	761	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	540	414	189	283	61	269	1294	516	106	939	379
Arrive On Green	0.21	0.29	0.29	0.12	0.19	0.17	0.16	0.36	0.36	0.06	0.26	0.26
Sat Flow, veh/h	1641	1870	1433	1641	1483	320	1641	3554	1418	1641	3554	1432
Grp Volume(v), veh/h	225	224	327	137	0	242	210	562	42	58	761	239
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1804	1641	1777	1418	1641	1777	1432
Q Serve(g_s), s	11.9	9.2	20.1	7.7	0.0	12.0	11.7	11.4	1.9	3.3	19.2	7.6
Cycle Q Clear(g_c), s	11.9	9.2	20.1	7.7	0.0	12.0	11.7	11.4	1.9	3.3	19.2	7.6
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	350	540	414	189	0	344	269	1294	516	106	939	379
V/C Ratio(X)	0.64	0.41	0.79	0.73	0.00	0.70	0.78	0.43	0.08	0.55	0.81	0.63
Avail Cap(c_a), veh/h	350	758	580	189	0	580	275	1313	524	155	1053	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	27.4	31.3	40.8	0.0	36.3	38.3	22.9	19.9	43.3	32.9	9.0
Incr Delay (d2), s/veh	4.0	0.5	4.9	13.0	0.0	2.6	13.1	0.2	0.1	4.4	4.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	3.9	6.9	3.6	0.0	5.2	5.4	4.3	0.6	1.4	8.1	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	28.0	36.2	53.8	0.0	39.0	51.4	23.2	20.0	47.7	37.3	11.6
LnGrp LOS	D	C	D	D	A	D	D	C	B	D	D	B
Approach Vol, veh/h		776			379			814			1058	
Approach Delay, s/veh		34.4			44.3			30.3			32.0	
Approach LOS		C			D			C			C	

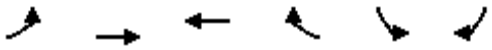
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	38.8	15.0	31.6	19.7	29.3	24.4	22.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	7.0	33.3	9.0	36.7	14.0	26.3	17.0	28.7
Max Q Clear Time (g_c+I1), s	5.3	13.4	9.7	22.1	13.7	21.2	13.9	14.0
Green Ext Time (p_c), s	0.0	2.4	0.0	1.9	0.0	2.1	0.2	0.7

Intersection Summary	
HCM 6th Ctrl Delay	33.7
HCM 6th LOS	C



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	287	20	37	290	17	22
Future Volume (vph)	287	20	37	290	17	22
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.923	
Flt Protected				0.994	0.979	
Satd. Flow (prot)	1846	0	0	1852	1550	0
Flt Permitted				0.994	0.979	
Satd. Flow (perm)	1846	0	0	1852	1550	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	22	40	315	18	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	334	0	0	355	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



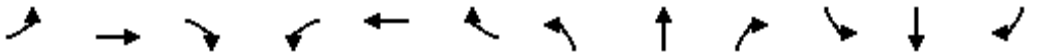
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	210	162	23	17	126
Future Volume (vph)	72	210	162	23	17	126
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.881	
Flt Protected		0.987			0.994	
Satd. Flow (prot)	0	1839	1831	0	1502	0
Flt Permitted		0.987			0.994	
Satd. Flow (perm)	0	1839	1831	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	228	176	25	18	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	306	201	0	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	120	868	52	160	1055
Future Volume (vph)	0	120	868	52	160	1055
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	130	943	57	174	1147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	130	943	57	174	1147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

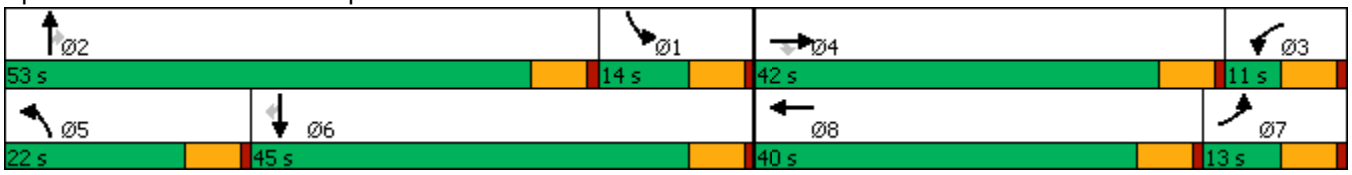


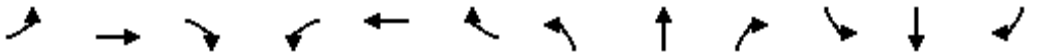
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	691	185	76	524	59	105	270	69	112	370	89
Future Volume (vph)	115	691	185	76	524	59	105	270	69	112	370	89
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3474	0	1630	1863	1432	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				136			136
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	751	201	83	570	64	114	293	75	122	402	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	751	201	83	634	0	114	293	75	122	402	97
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	13.0	42.0	42.0	11.0	40.0		22.0	53.0	53.0	14.0	45.0	45.0
Total Split (%)	10.8%	35.0%	35.0%	9.2%	33.3%		18.3%	44.2%	44.2%	11.7%	37.5%	37.5%
Maximum Green (s)	7.0	36.0	36.0	5.0	34.0		16.0	47.0	47.0	8.0	39.0	39.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	10.4	28.3	28.3	7.3	25.2		13.9	23.6	23.6	18.6	28.2	28.2
Actuated g/C Ratio	0.11	0.30	0.30	0.08	0.27		0.15	0.25	0.25	0.20	0.30	0.30
v/c Ratio	0.69	0.71	0.36	0.66	0.68		0.47	0.63	0.16	0.38	0.72	0.19
Control Delay	66.5	34.5	7.0	73.6	35.6		47.9	39.4	0.8	40.2	38.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.5	34.5	7.0	73.6	35.6		47.9	39.4	0.8	40.2	38.8	2.5
LOS	E	C	A	E	D		D	D	A	D	D	A
Approach Delay		33.1			40.0			35.4			33.4	
Approach LOS		C			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 94.4			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: Laspina St & Tulare Ave

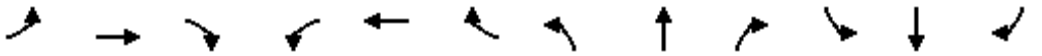




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	691	185	76	524	59	105	270	69	112	370	89
Future Volume (veh/h)	115	691	185	76	524	59	105	270	69	112	370	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	125	751	201	83	570	64	114	293	75	122	402	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1056	421	144	805	90	184	444	339	278	551	422
Arrive On Green	0.13	0.30	0.30	0.09	0.25	0.22	0.11	0.24	0.24	0.17	0.29	0.29
Sat Flow, veh/h	1641	3554	1415	1641	3208	359	1641	1870	1431	1641	1870	1433
Grp Volume(v), veh/h	125	751	201	83	315	319	114	293	75	122	402	97
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1791	1641	1870	1431	1641	1870	1433
Q Serve(g_s), s	5.5	14.5	5.5	3.7	12.4	12.5	5.1	10.9	3.2	5.1	14.9	2.3
Cycle Q Clear(g_c), s	5.5	14.5	5.5	3.7	12.4	12.5	5.1	10.9	3.2	5.1	14.9	2.3
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	1056	421	144	446	449	184	444	339	278	551	422
V/C Ratio(X)	0.57	0.71	0.48	0.58	0.71	0.71	0.62	0.66	0.22	0.44	0.73	0.23
Avail Cap(c_a), veh/h	220	1756	699	149	832	838	384	1192	912	278	997	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	24.1	8.5	33.7	26.2	26.5	32.6	26.5	23.6	28.6	24.4	7.1
Incr Delay (d2), s/veh	3.4	0.9	0.8	5.0	2.1	2.1	3.3	1.7	0.3	1.1	1.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.4	2.5	1.6	4.8	5.0	2.0	4.5	1.0	1.9	5.9	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	25.0	9.3	38.7	28.3	28.5	35.9	28.2	23.9	29.7	26.3	7.4
LnGrp LOS	C	C	A	D	C	C	D	C	C	C	C	A
Approach Vol, veh/h		1077			717			482			621	
Approach Delay, s/veh		23.2			29.6			29.4			24.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	22.2	10.8	26.9	12.6	26.6	14.3	23.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	47.0	5.0	36.0	16.0	39.0	7.0	34.0
Max Q Clear Time (g_c+I1), s	7.1	12.9	5.7	16.5	7.1	16.9	7.5	14.5
Green Ext Time (p_c), s	0.0	1.3	0.0	4.0	0.2	1.8	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

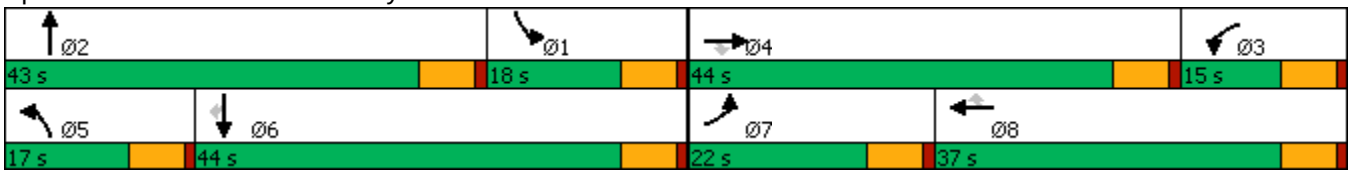


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	471	203	67	359	211	103	510	61	267	529	273
Future Volume (vph)	208	471	203	67	359	211	103	510	61	267	529	273
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			229		11				297
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	512	221	73	390	229	112	554	66	290	575	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	512	221	73	390	229	112	620	0	290	575	297
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	44.0	44.0	15.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	36.7%	36.7%	12.5%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	38.0	38.0	9.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.1	28.1	28.1	13.5	20.5	20.5	12.3	26.1		23.7	37.5	37.5
Actuated g/C Ratio	0.17	0.27	0.27	0.13	0.20	0.20	0.12	0.25		0.23	0.36	0.36
v/c Ratio	0.80	0.54	0.41	0.35	0.56	0.49	0.59	0.71		0.79	0.86	0.42
Control Delay	65.6	37.5	7.0	48.5	41.4	8.5	59.6	40.2		56.7	46.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	65.6	37.5	7.0	48.5	41.4	8.5	59.6	40.2		56.7	46.5	5.1
LOS	E	D	A	D	D	A	E	D		E	D	A
Approach Delay		37.1			31.3			43.2			38.5	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 104.6			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

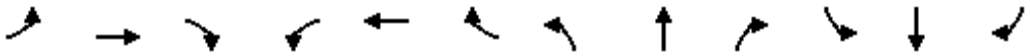
Splits and Phases: 11: Mooney Blvd & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	471	203	67	359	211	103	510	61	267	529	273
Future Volume (veh/h)	208	471	203	67	359	211	103	510	61	267	529	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	226	512	221	73	390	229	112	554	66	290	575	297
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	795	315	233	678	272	171	779	92	361	674	517
Arrive On Green	0.18	0.22	0.22	0.14	0.19	0.19	0.10	0.24	0.22	0.22	0.36	0.36
Sat Flow, veh/h	1641	3554	1410	1641	3554	1428	1641	3185	378	1641	1870	1435
Grp Volume(v), veh/h	226	512	221	73	390	229	112	308	312	290	575	297
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1428	1641	1777	1786	1641	1870	1435
Q Serve(g_s), s	12.4	12.3	9.6	3.8	9.4	8.3	6.2	15.0	15.1	15.8	26.8	15.7
Cycle Q Clear(g_c), s	12.4	12.3	9.6	3.8	9.4	8.3	6.2	15.0	15.1	15.8	26.8	15.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	287	795	315	233	678	272	171	435	437	361	674	517
V/C Ratio(X)	0.79	0.64	0.70	0.31	0.58	0.84	0.66	0.71	0.71	0.80	0.85	0.57
Avail Cap(c_a), veh/h	313	1507	598	233	1243	499	226	735	739	361	793	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	33.2	16.6	36.3	34.7	12.0	40.6	32.6	32.8	34.9	27.9	24.3
Incr Delay (d2), s/veh	11.6	0.9	2.8	0.8	0.8	6.9	4.2	2.1	2.2	12.3	7.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	5.0	4.3	1.5	3.8	4.8	2.5	6.1	6.3	7.0	12.1	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	34.1	19.4	37.1	35.5	18.9	44.8	34.7	35.0	47.2	35.7	25.3
LnGrp LOS	D	C	B	D	D	B	D	C	C	D	D	C
Approach Vol, veh/h		959			692			732			1162	
Approach Delay, s/veh		34.2			30.2			36.4			35.9	
Approach LOS		C			C			D			D	

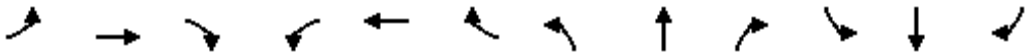
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.8	27.1	17.4	25.1	13.8	38.0	20.5	22.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	9.0	38.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	17.8	17.1	5.8	14.3	8.2	28.8	14.4	11.4
Green Ext Time (p_c), s	0.0	2.1	0.0	3.1	0.1	2.6	0.1	2.4

Intersection Summary	
HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	562	132	52	486	4	58	22	29	0	23	27
Future Volume (vph)	13	562	132	52	486	4	58	22	29	0	23	27
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.914			0.927	
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1630	1863	1458	1630	1861	0	1630	1703	0	0	1727	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1630	1863	1458	1630	1861	0	1630	1703	0	0	1727	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	611	143	57	528	4	63	24	32	0	25	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	611	143	57	532	0	63	56	0	0	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

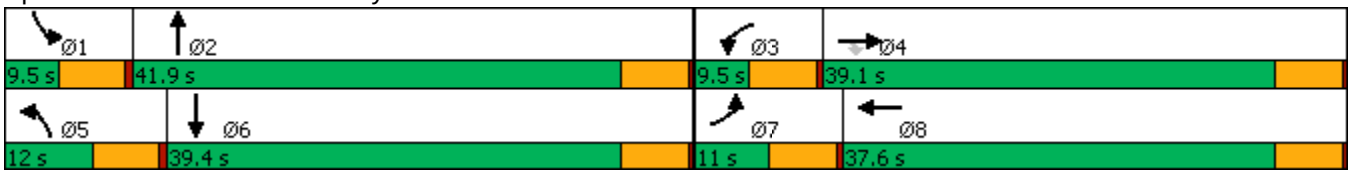


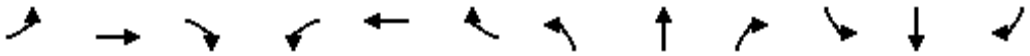
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	112	125	19	119	4	91	694	19	8	843	154
Future Volume (vph)	146	112	125	19	119	4	91	694	19	8	843	154
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3442	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1852	0	1630	3522	0	1630	3442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147		2			3			23	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	122	136	21	129	4	99	754	21	9	916	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	122	136	21	133	0	99	775	0	9	1083	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	11.0	39.1	39.1	9.5	37.6		12.0	41.9		9.5	39.4	
Total Split (%)	11.0%	39.1%	39.1%	9.5%	37.6%		12.0%	41.9%		9.5%	39.4%	
Maximum Green (s)	5.5	33.6	33.6	4.0	32.1		6.5	36.4		4.0	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	7.2	22.8	22.8	5.6	14.8		8.2	41.3		5.6	30.5	
Actuated g/C Ratio	0.09	0.30	0.30	0.07	0.19		0.11	0.54		0.07	0.40	
v/c Ratio	1.05	0.22	0.26	0.18	0.37		0.57	0.41		0.08	0.79	
Control Delay	127.8	24.0	5.2	42.8	29.8		51.9	13.5		41.1	26.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	127.8	24.0	5.2	42.8	29.8		51.9	13.5		41.1	26.0	
LOS	F	C	A	D	C		D	B		D	C	
Approach Delay		57.4			31.6			17.8			26.1	
Approach LOS		E			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 77.1			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

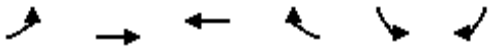




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	112	125	19	119	4	91	694	19	8	843	154
Future Volume (veh/h)	146	112	125	19	119	4	91	694	19	8	843	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	159	122	136	21	129	4	99	754	21	9	916	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	414	317	69	283	9	159	1623	45	53	1180	215
Arrive On Green	0.11	0.22	0.22	0.04	0.16	0.13	0.10	0.46	0.44	0.03	0.40	0.37
Sat Flow, veh/h	1641	1870	1430	1641	1803	56	1641	3528	98	1641	2986	544
Grp Volume(v), veh/h	159	122	136	21	0	133	99	380	395	9	545	538
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1859	1641	1777	1849	1641	1777	1754
Q Serve(g_s), s	6.3	3.6	5.4	0.8	0.0	4.3	3.8	9.6	9.6	0.4	17.5	17.6
Cycle Q Clear(g_c), s	6.3	3.6	5.4	0.8	0.0	4.3	3.8	9.6	9.6	0.4	17.5	17.6
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.31
Lane Grp Cap(c), veh/h	175	414	317	69	0	292	159	818	851	53	702	693
V/C Ratio(X)	0.91	0.29	0.43	0.30	0.00	0.46	0.62	0.46	0.46	0.17	0.78	0.78
Avail Cap(c_a), veh/h	175	1001	765	138	0	952	200	1027	1069	138	959	946
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	21.3	22.0	30.5	0.0	25.1	28.5	12.2	12.2	30.9	17.3	17.5
Incr Delay (d2), s/veh	42.8	0.4	0.9	2.4	0.0	1.1	3.9	0.4	0.4	1.5	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	1.4	1.6	0.3	0.0	1.7	1.5	2.9	3.0	0.1	6.1	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	21.7	22.9	32.9	0.0	26.2	32.4	12.6	12.6	32.4	20.1	20.4
LnGrp LOS	E	C	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h		417			154			874			1092	
Approach Delay, s/veh		41.2			27.1			14.8			20.3	
Approach LOS		D			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	34.2	6.8	18.5	10.4	29.9	11.0	14.3
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.0	36.4	4.0	33.6	6.5	33.9	5.5	32.1
Max Q Clear Time (g_c+I1), s	2.4	11.6	2.8	7.4	5.8	19.6	8.3	6.3
Green Ext Time (p_c), s	0.0	2.8	0.0	0.9	0.0	3.9	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

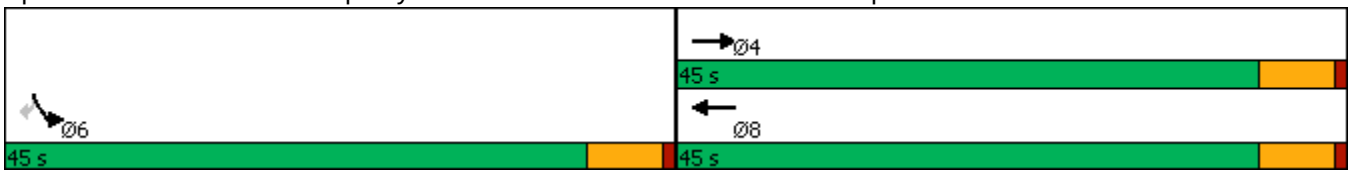


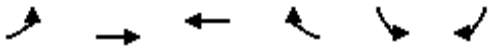
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	584	633	0	227	76
Future Volume (vph)	0	584	633	0	227	76
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						83
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	635	688	0	247	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	635	688	0	247	83
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		15.3	15.3		13.7	13.7
Actuated g/C Ratio		0.41	0.41		0.37	0.37
v/c Ratio		0.44	0.47		0.41	0.14
Control Delay		9.3	9.6		11.8	3.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		9.3	9.6		11.8	3.5
LOS		A	A		B	A
Approach Delay		9.3	9.6		9.7	
Approach LOS		A	A		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 37.2			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

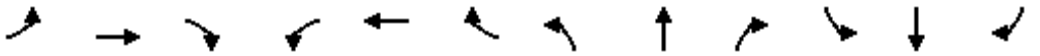




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	584	633	0	227	76
Future Volume (veh/h)	0	584	633	0	227	76
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	635	688	0	247	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1419	1419	0	510	454
Arrive On Green	0.00	0.40	0.40	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	635	688	0	247	83
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.6	4.0	0.0	3.4	1.1
Cycle Q Clear(g_c), s	0.0	3.6	4.0	0.0	3.4	1.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1419	1419	0	510	454
V/C Ratio(X)	0.00	0.45	0.48	0.00	0.48	0.18
Avail Cap(c_a), veh/h	0	5279	5279	0	2437	2169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.1	6.2	0.0	7.7	6.9
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.0	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	0.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.3	6.4	0.0	8.4	7.1
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		635	688		330	
Approach Delay, s/veh		6.3	6.4		8.1	
Approach LOS		A	A		A	

Timer - Assigned Phs	4	6	8
Phs Duration (G+Y+Rc), s	15.0	12.6	15.0
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s	5.6	5.4	6.0
Green Ext Time (p_c), s	2.8	1.2	3.0

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

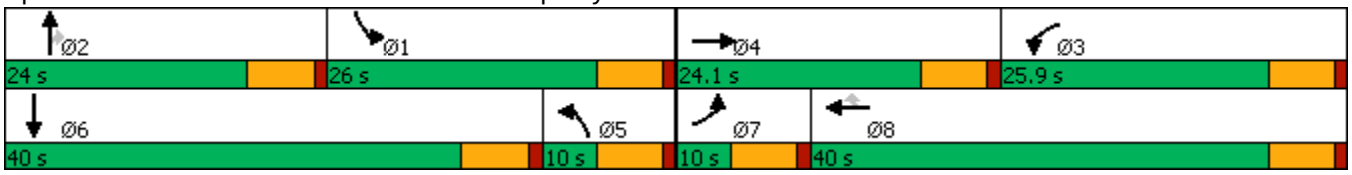


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	16	5	612	21	622	0	47	536	692	144	0
Future Volume (vph)	2	16	5	612	21	622	0	47	536	692	144	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.966				0.850			0.850			
Flt Protected	0.950			0.950	0.955					0.950		
Satd. Flow (prot)	1630	1790	0	1548	1690	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1630	1790	0	1548	1770	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				676			583			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	17	5	665	23	676	0	51	583	752	157	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	22	0	346	342	676	0	51	583	752	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		25.9	40.0	40.0	10.0	24.0	24.0	26.0	40.0	
Total Split (%)	10.0%	24.1%		25.9%	40.0%	40.0%	10.0%	24.0%	24.0%	26.0%	40.0%	
Maximum Green (s)	4.0	18.1		19.9	34.0	34.0	4.0	18.0	18.0	20.0	34.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.1	10.1		31.4	31.4	36.3		12.0	12.0	22.2	38.2	
Actuated g/C Ratio	0.07	0.12		0.37	0.37	0.43		0.14	0.14	0.26	0.45	
v/c Ratio	0.02	0.10		0.60	0.54	0.68		0.19	0.82	0.90	0.19	
Control Delay	41.5	28.9		31.9	29.8	5.8		33.6	14.1	47.5	14.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	41.5	28.9		31.9	29.8	5.8		33.6	14.1	47.5	14.7	
LOS	D	C		C	C	A		C	B	D	B	
Approach Delay		30.0			18.4			15.7			41.8	
Approach LOS		C			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 84.3			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 25.2		Intersection LOS: C	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave



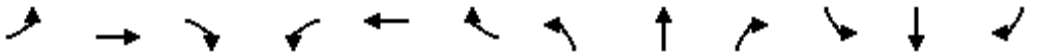
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	5	612	21	622	0	47	536	692	144	0
Future Volume (veh/h)	2	16	5	612	21	622	0	47	536	692	144	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	17	5	681	0	676	0	51	583	752	157	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	41	120	35	808	0	443	577	430	335	804	245	0
Arrive On Green	0.03	0.09	0.06	0.25	0.00	0.31	0.00	0.23	0.23	0.25	0.13	0.00
Sat Flow, veh/h	1641	1373	404	3281	0	1433	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	22	681	0	676	0	51	583	752	157	0
Grp Sat Flow(s),veh/h/ln	1641	0	1777	1641	0	1433	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	1.0	17.2	0.0	11.7	0.0	1.9	20.0	20.1	6.9	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.0	17.2	0.0	11.7	0.0	1.9	20.0	20.1	6.9	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	41	0	156	808	0	443	577	430	335	804	245	0
V/C Ratio(X)	0.05	0.00	0.14	0.84	0.00	1.53	0.00	0.12	1.74	0.94	0.64	0.00
Avail Cap(c_a), veh/h	113	0	410	825	0	593	577	430	335	804	773	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	0.0	36.9	31.2	0.0	5.7	0.0	26.6	33.5	31.8	35.9	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.4	7.8	0.0	248.4	0.0	0.1	344.7	18.0	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	7.0	0.0	36.8	0.0	0.8	38.5	8.9	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.9	0.0	37.3	39.0	0.0	254.1	0.0	26.7	378.2	49.8	38.7	0.0
LnGrp LOS	D	A	D	D	A	F	A	C	F	D	D	A
Approach Vol, veh/h		24			1357			634			909	
Approach Delay, s/veh		37.7			146.1			349.9			47.9	
Approach LOS		D			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	24.0	25.5	11.6	34.6	15.4	6.2	30.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	20.0	18.0	19.9	18.1	4.0	34.0	4.0	34.0
Max Q Clear Time (g_c+I1), s	22.1	22.0	19.2	3.0	0.0	8.9	2.1	13.7
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.0	0.5	0.0	3.3

Intersection Summary	
HCM 6th Ctrl Delay	158.9
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

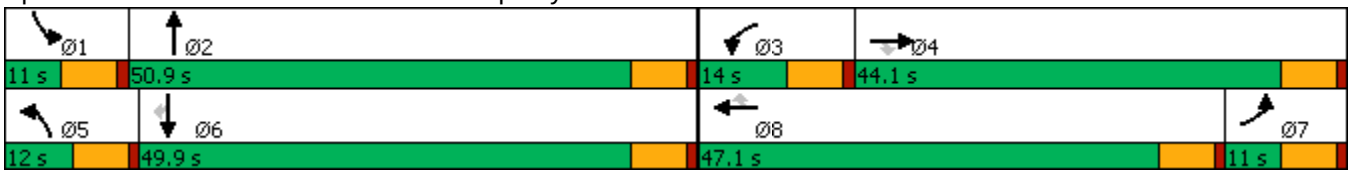


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	427	719	106	101	779	192	166	339	263	282	121	443
Future Volume (vph)	427	719	106	101	779	192	166	339	263	282	121	443
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3280	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3280	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			139		193				278
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	464	782	115	110	847	209	180	368	286	307	132	482
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	782	115	110	847	209	180	654	0	307	132	482
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	12.4	26.7	26.7	10.5	24.7	24.7	8.4	23.0		7.3	22.0	22.0
Actuated g/C Ratio	0.15	0.32	0.32	0.12	0.29	0.29	0.10	0.27		0.09	0.26	0.26
v/c Ratio	1.00	0.70	0.21	0.54	0.57	0.40	1.12	0.63		1.12	0.27	0.56
Control Delay	80.0	29.8	4.2	51.4	27.2	11.9	145.0	21.1		129.1	26.2	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	80.0	29.8	4.2	51.4	27.2	11.9	145.0	21.1		129.1	26.2	13.4
LOS	E	C	A	D	C	B	F	C		F	C	B
Approach Delay		44.7			26.7			47.9			53.8	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 84.2			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 42.4		Intersection LOS: D	
Intersection Capacity Utilization 73.6%		ICU Level of Service D	
Analysis Period (min) 15			

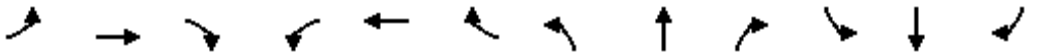
Splits and Phases: 4: Hillman St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	427	719	106	101	779	192	166	339	263	282	121	443
Future Volume (veh/h)	427	719	106	101	779	192	166	339	263	282	121	443
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	464	782	115	110	847	209	180	368	286	307	132	482
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	1083	431	177	1462	410	169	553	423	287	521	693
Arrive On Green	0.13	0.30	0.30	0.11	0.29	0.29	0.10	0.29	0.27	0.09	0.28	0.28
Sat Flow, veh/h	3183	3554	1415	1641	5106	1433	1641	1899	1453	3183	1870	2489
Grp Volume(v), veh/h	464	782	115	110	847	209	180	344	310	307	132	482
Grp Sat Flow(s),veh/h/ln	1591	1777	1415	1641	1702	1433	1641	1777	1575	1591	1870	1244
Q Serve(g_s), s	9.8	15.2	4.8	5.0	11.0	6.2	8.0	13.2	13.7	7.0	4.3	8.2
Cycle Q Clear(g_c), s	9.8	15.2	4.8	5.0	11.0	6.2	8.0	13.2	13.7	7.0	4.3	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		1.00
Lane Grp Cap(c), veh/h	401	1083	431	177	1462	410	169	518	459	287	521	693
V/C Ratio(X)	1.16	0.72	0.27	0.62	0.58	0.51	1.06	0.66	0.68	1.07	0.25	0.70
Avail Cap(c_a), veh/h	401	1836	731	211	2836	796	169	1074	952	287	1106	1472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.9	24.0	20.4	33.1	23.7	10.0	34.8	24.2	25.1	35.3	21.7	9.4
Incr Delay (d2), s/veh	95.3	0.9	0.3	4.1	0.4	1.0	87.3	1.5	1.7	72.7	0.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	5.6	1.4	2.0	3.9	2.7	7.0	5.0	4.7	5.4	1.7	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	129.2	25.0	20.7	37.2	24.1	11.0	122.1	25.6	26.9	108.0	22.0	10.6
LnGrp LOS	F	C	C	D	C	B	F	C	C	F	C	B
Approach Vol, veh/h		1361			1166			834			921	
Approach Delay, s/veh		60.2			23.0			46.9			44.7	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	26.6	12.3	27.6	12.0	25.6	13.8	26.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	8.0	38.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	9.0	15.7	7.0	17.2	10.0	10.2	11.8	13.0
Green Ext Time (p_c), s	0.0	2.6	0.0	3.8	0.0	3.0	0.0	5.0

Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	847	267	69	711	47	211	158	104	121	212	73
Future Volume (vph)	109	847	267	69	711	47	211	158	104	121	212	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			136			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	921	290	75	773	51	229	172	113	132	230	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	921	290	75	773	51	229	172	113	132	230	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	15.0	39.4	39.4	11.0	35.4	35.4	24.0	48.6	48.6	21.0	45.6	45.6
Total Split (%)	12.5%	32.8%	32.8%	9.2%	29.5%	29.5%	20.0%	40.5%	40.5%	17.5%	38.0%	38.0%
Maximum Green (s)	9.0	33.4	33.4	5.0	29.4	29.4	18.0	42.6	42.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.2	32.1	32.1	7.2	28.1	28.1	19.1	26.3	26.3	14.3	21.5	21.5
Actuated g/C Ratio	0.12	0.33	0.33	0.07	0.29	0.29	0.20	0.27	0.27	0.15	0.22	0.22
v/c Ratio	0.62	0.78	0.52	0.62	0.52	0.10	0.71	0.34	0.22	0.55	0.55	0.17
Control Delay	60.2	35.7	17.8	70.8	31.0	0.4	52.0	30.5	0.9	50.0	38.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	35.7	17.8	70.8	31.0	0.4	52.0	30.5	0.9	50.0	38.4	0.8
LOS	E	D	B	E	C	A	D	C	A	D	D	A
Approach Delay		34.0			32.6			33.6			35.2	
Approach LOS		C			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 96.3			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 33.7		Intersection LOS: C	
Intersection Capacity Utilization 68.1%		ICU Level of Service C	
Analysis Period (min) 15			

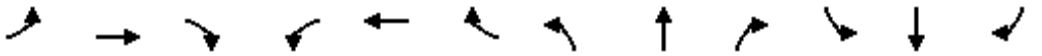
Splits and Phases: 5: Laspina St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	847	267	69	711	47	211	158	104	121	212	73
Future Volume (veh/h)	109	847	267	69	711	47	211	158	104	121	212	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	118	921	290	75	773	51	229	172	113	132	230	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	1188	474	132	1548	429	302	505	382	201	390	298
Arrive On Green	0.11	0.33	0.33	0.08	0.30	0.30	0.18	0.27	0.27	0.12	0.21	0.21
Sat Flow, veh/h	1641	3554	1417	1641	5106	1415	1641	1870	1414	1641	1870	1429
Grp Volume(v), veh/h	118	921	290	75	773	51	229	172	113	132	230	79
Grp Sat Flow(s),veh/h/ln	1641	1777	1417	1641	1702	1415	1641	1870	1414	1641	1870	1429
Q Serve(g_s), s	5.7	19.3	7.2	3.7	10.3	2.2	11.0	6.1	3.6	6.4	9.2	3.8
Cycle Q Clear(g_c), s	5.7	19.3	7.2	3.7	10.3	2.2	11.0	6.1	3.6	6.4	9.2	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	1188	474	132	1548	429	302	505	382	201	390	298
V/C Ratio(X)	0.65	0.78	0.61	0.57	0.50	0.12	0.76	0.34	0.30	0.66	0.59	0.26
Avail Cap(c_a), veh/h	218	1518	605	139	1934	536	396	1006	761	336	939	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	24.8	5.9	36.7	23.7	20.9	32.1	24.3	11.5	34.7	29.6	27.5
Incr Delay (d2), s/veh	4.9	2.0	1.3	5.0	0.3	0.1	6.0	0.4	0.4	3.6	1.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	7.4	3.7	1.5	3.7	0.7	4.4	2.5	1.6	2.5	3.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	26.8	7.2	41.7	24.0	21.0	38.1	24.7	11.9	38.4	31.0	27.9
LnGrp LOS	D	C	A	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		1329			899			514			441	
Approach Delay, s/veh		23.7			25.3			27.9			32.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	26.4	10.6	31.7	19.2	21.3	13.2	29.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	42.6	5.0	33.4	18.0	39.6	9.0	29.4
Max Q Clear Time (g_c+I1), s	8.4	8.1	5.7	21.3	13.0	11.2	7.7	12.3
Green Ext Time (p_c), s	0.2	1.0	0.0	4.4	0.3	1.1	0.0	3.4

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

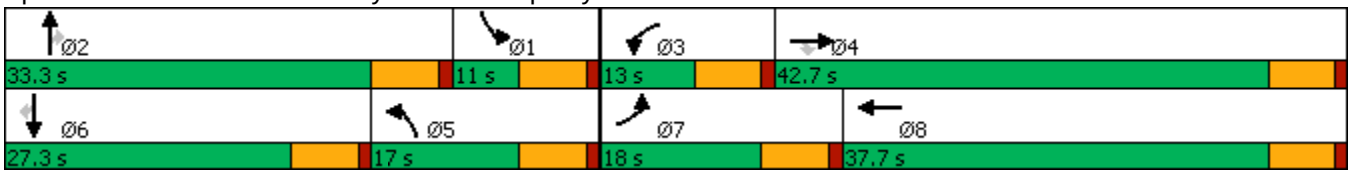


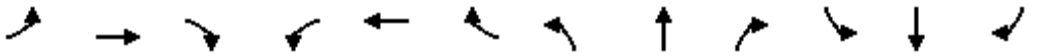
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	444	301	141	363	77	193	517	63	95	700	220
Future Volume (vph)	207	444	301	141	363	77	193	517	63	95	700	220
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1808	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1433	1630	1808	0	1630	3539	1430	1630	3539	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195		12				164			239
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	483	327	153	395	84	210	562	68	103	761	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	225	483	327	153	479	0	210	562	68	103	761	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	18.0	42.7	42.7	13.0	37.7		17.0	33.3	33.3	11.0	27.3	27.3
Total Split (%)	18.0%	42.7%	42.7%	13.0%	37.7%		17.0%	33.3%	33.3%	11.0%	27.3%	27.3%
Maximum Green (s)	12.0	36.7	36.7	7.0	31.7		11.0	27.3	27.3	5.0	21.3	21.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	14.0	35.0	35.0	9.0	29.9		13.0	22.7	22.7	13.5	23.1	23.1
Actuated g/C Ratio	0.15	0.36	0.36	0.09	0.31		0.14	0.24	0.24	0.14	0.24	0.24
v/c Ratio	0.95	0.71	0.51	1.01	0.84		0.95	0.67	0.15	0.45	0.90	0.46
Control Delay	89.7	33.0	12.1	120.9	44.4		94.0	37.6	0.7	49.7	50.7	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.7	33.0	12.1	120.9	44.4		94.0	37.6	0.7	49.7	50.7	7.4
LOS	F	C	B	F	D		F	D	A	D	D	A
Approach Delay		38.7			62.9			48.7			41.2	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 96.2			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 46.0		Intersection LOS: D	
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	444	301	141	363	77	193	517	63	95	700	220
Future Volume (veh/h)	207	444	301	141	363	77	193	517	63	95	700	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	225	483	327	153	395	84	210	562	68	103	761	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	666	511	155	452	96	224	782	314	265	870	350
Arrive On Green	0.15	0.36	0.36	0.09	0.30	0.28	0.14	0.22	0.22	0.16	0.24	0.24
Sat Flow, veh/h	1641	1870	1435	1641	1489	317	1641	3554	1430	1641	3554	1431
Grp Volume(v), veh/h	225	483	327	153	0	479	210	562	68	103	761	239
Grp Sat Flow(s),veh/h/ln	1641	1870	1435	1641	0	1806	1641	1777	1430	1641	1777	1431
Q Serve(g_s), s	12.9	21.3	10.7	8.9	0.0	24.0	12.1	14.0	2.7	5.3	19.6	9.2
Cycle Q Clear(g_c), s	12.9	21.3	10.7	8.9	0.0	24.0	12.1	14.0	2.7	5.3	19.6	9.2
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	666	511	155	0	549	224	782	314	265	870	350
V/C Ratio(X)	0.93	0.72	0.64	0.99	0.00	0.87	0.94	0.72	0.22	0.39	0.88	0.68
Avail Cap(c_a), veh/h	241	760	583	155	0	639	224	1093	440	265	870	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	26.6	9.0	43.1	0.0	31.6	40.7	34.4	15.7	35.7	34.6	13.3
Incr Delay (d2), s/veh	39.9	3.0	1.9	68.1	0.0	11.4	43.0	1.4	0.3	0.9	9.9	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	9.0	5.1	6.3	0.0	11.2	7.2	5.7	1.2	2.1	8.9	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.1	29.6	10.9	111.1	0.0	43.0	83.7	35.8	16.0	36.7	44.5	18.6
LnGrp LOS	F	C	B	F	A	D	F	D	B	D	D	B
Approach Vol, veh/h		1035			632			840			1103	
Approach Delay, s/veh		34.6			59.5			46.2			38.2	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.4	24.9	13.0	37.9	17.0	27.3	18.0	32.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	27.3	7.0	36.7	11.0	21.3	12.0	31.7
Max Q Clear Time (g_c+I1), s	7.3	16.0	10.9	23.3	14.1	21.6	14.9	26.0
Green Ext Time (p_c), s	0.0	2.1	0.0	2.8	0.0	0.0	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	445	166	37	431	108	22
Future Volume (vph)	445	166	37	431	108	22
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	484	180	40	468	117	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	484	180	40	468	117	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

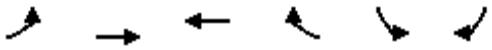
Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	445	166	37	431	108	22
Future Vol, veh/h	445	166	37	431	108	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	484	180	40	468	117	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	664	0	1032	484
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	548	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	925	-	258	583
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	925	-	247	583
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	583	-	-	925	-
HCM Lane V/C Ratio	0.475	0.041	-	-	0.043	-
HCM Control Delay (s)	32.1	11.4	-	-	9.1	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.4	0.1	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	221	172	23	17	126
Future Volume (vph)	72	221	172	23	17	126
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.984		0.881	
Flt Protected		0.988			0.994	
Satd. Flow (prot)	0	1840	1833	0	1502	0
Flt Permitted		0.988			0.994	
Satd. Flow (perm)	0	1840	1833	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	240	187	25	18	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	318	212	0	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	72	221	172	23	17	126
Future Vol, veh/h	72	221	172	23	17	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	240	187	25	18	137

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	212	0	-	0	596	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	396	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1358	-	-	-	466	841
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1358	-	-	-	435	841
Mov Cap-2 Maneuver	-	-	-	-	435	-
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1358	-	-	-	757
HCM Lane V/C Ratio	0.058	-	-	-	0.205
HCM Control Delay (s)	7.8	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	144	877	52	175	1058
Future Volume (vph)	0	144	877	52	175	1058
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	157	953	57	190	1150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	157	953	57	190	1150
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

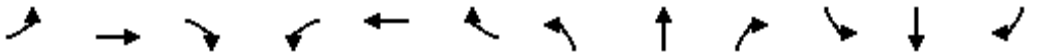
Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	144	877	52	175	1058
Future Vol, veh/h	0	144	877	52	175	1058
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None		None		None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	157	953	57	190	1150

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	477	0	0	1010	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	534	-	-	682	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	534	-	-	682	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	534	682	-
HCM Lane V/C Ratio	-	-	0.293	0.279	-
HCM Control Delay (s)	-	-	14.5	12.3	-
HCM Lane LOS	-	-	B	B	-
HCM 95th %tile Q(veh)	-	-	1.2	1.1	-

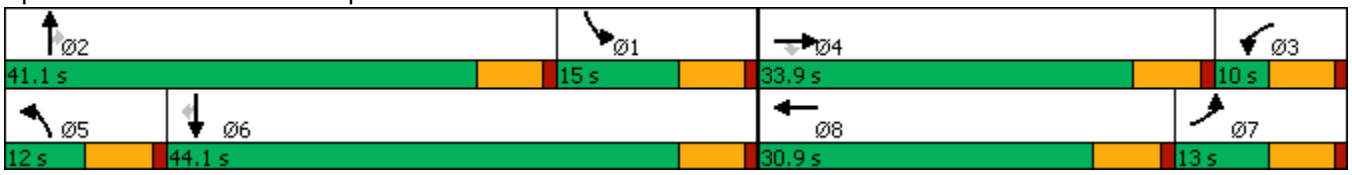


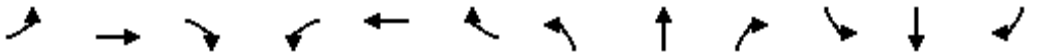
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	750	185	84	557	73	105	270	73	119	370	89
Future Volume (vph)	115	750	185	84	557	73	105	270	73	119	370	89
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3466	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3466	0	1630	1863	1433	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229		14				164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	815	201	91	605	79	114	293	79	129	402	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	815	201	91	684	0	114	293	79	129	402	97
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	13.0	33.9	33.9	10.0	30.9		12.0	41.1	41.1	15.0	44.1	44.1
Total Split (%)	13.0%	33.9%	33.9%	10.0%	30.9%		12.0%	41.1%	41.1%	15.0%	44.1%	44.1%
Maximum Green (s)	7.0	27.9	27.9	4.0	24.9		6.0	35.1	35.1	9.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	9.5	25.5	25.5	6.4	22.4		8.2	21.5	21.5	12.4	25.8	25.8
Actuated g/C Ratio	0.12	0.31	0.31	0.08	0.27		0.10	0.26	0.26	0.15	0.31	0.31
v/c Ratio	0.66	0.74	0.34	0.72	0.72		0.70	0.60	0.16	0.52	0.69	0.17
Control Delay	57.2	31.0	4.1	73.6	32.2		64.5	32.3	0.7	44.4	31.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	31.0	4.1	73.6	32.2		64.5	32.3	0.7	44.4	31.4	1.0
LOS	E	C	A	E	C		E	C	A	D	C	A
Approach Delay		29.1			37.0			34.7			29.4	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 82.2			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 66.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: Laspina St & Tulare Ave

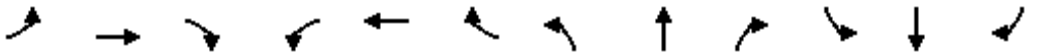




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	750	185	84	557	73	105	270	73	119	370	89
Future Volume (veh/h)	115	750	185	84	557	73	105	270	73	119	370	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	125	815	201	91	605	79	114	293	79	129	402	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	1093	435	130	822	107	174	445	340	268	553	424
Arrive On Green	0.13	0.31	0.31	0.08	0.26	0.23	0.11	0.24	0.24	0.16	0.30	0.30
Sat Flow, veh/h	1641	3554	1416	1641	3147	410	1641	1870	1431	1641	1870	1433
Grp Volume(v), veh/h	125	815	201	91	341	343	114	293	79	129	402	97
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1777	1780	1641	1870	1431	1641	1870	1433
Q Serve(g_s), s	5.5	15.6	5.4	4.1	13.3	13.4	5.0	10.7	3.4	5.4	14.6	2.3
Cycle Q Clear(g_c), s	5.5	15.6	5.4	4.1	13.3	13.4	5.0	10.7	3.4	5.4	14.6	2.3
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	1093	435	130	464	465	174	445	340	268	553	424
V/C Ratio(X)	0.61	0.75	0.46	0.70	0.73	0.74	0.66	0.66	0.23	0.48	0.73	0.23
Avail Cap(c_a), veh/h	206	1406	560	130	632	633	174	918	702	268	992	760
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	23.5	8.1	33.9	25.5	25.8	32.5	26.0	23.2	28.7	23.9	7.2
Incr Delay (d2), s/veh	5.0	1.6	0.8	15.2	2.9	3.0	8.7	1.7	0.3	1.3	1.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.8	2.4	2.0	5.2	5.3	2.2	4.4	1.0	2.0	5.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	25.1	8.8	49.1	28.4	28.8	41.1	27.7	23.6	30.0	25.7	7.4
LnGrp LOS	D	C	A	D	C	C	D	C	C	C	C	A
Approach Vol, veh/h		1141			775			486			628	
Approach Delay, s/veh		23.5			31.0			30.2			23.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	22.0	10.0	27.2	12.0	26.3	13.5	23.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	35.1	4.0	27.9	6.0	38.1	7.0	24.9
Max Q Clear Time (g_c+I1), s	7.4	12.7	6.1	17.6	7.0	16.6	7.5	15.4
Green Ext Time (p_c), s	0.1	1.3	0.0	3.4	0.0	1.8	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	26.5
HCM 6th LOS	C

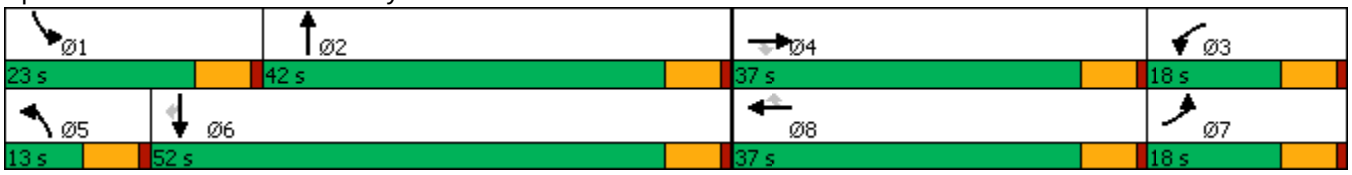


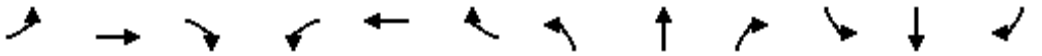
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	541	203	86	414	220	103	510	76	274	529	273
Future Volume (vph)	208	541	203	86	414	220	103	510	76	274	529	273
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3454	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3454	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			239		14				297
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	588	221	93	450	239	112	554	83	298	575	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	588	221	93	450	239	112	637	0	298	575	297
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	18.0	37.0	37.0	18.0	37.0	37.0	13.0	42.0		23.0	52.0	52.0
Total Split (%)	15.0%	30.8%	30.8%	15.0%	30.8%	30.8%	10.8%	35.0%		19.2%	43.3%	43.3%
Maximum Green (s)	12.0	31.0	31.0	12.0	31.0	31.0	7.0	36.0		17.0	46.0	46.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	16.2	28.9	28.9	12.2	21.7	21.7	9.2	28.7		19.4	38.9	38.9
Actuated g/C Ratio	0.16	0.28	0.28	0.12	0.21	0.21	0.09	0.28		0.19	0.38	0.38
v/c Ratio	0.88	0.59	0.40	0.48	0.60	0.49	0.77	0.65		0.96	0.81	0.41
Control Delay	77.3	36.8	6.8	54.5	40.5	8.1	81.8	35.2		87.9	39.4	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	77.3	36.8	6.8	54.5	40.5	8.1	81.8	35.2		87.9	39.4	4.4
LOS	E	D	A	D	D	A	F	D		F	D	A
Approach Delay		39.3			32.3			42.2			42.9	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.4			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 39.5		Intersection LOS: D	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Mooney Blvd & Tulare Ave

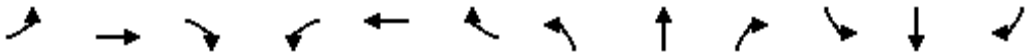




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	541	203	86	414	220	103	510	76	274	529	273
Future Volume (veh/h)	208	541	203	86	414	220	103	510	76	274	529	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	226	588	221	93	450	239	112	554	83	298	575	297
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	864	343	193	741	298	160	800	119	339	688	528
Arrive On Green	0.15	0.24	0.24	0.12	0.21	0.21	0.10	0.26	0.24	0.21	0.37	0.37
Sat Flow, veh/h	1641	3554	1412	1641	3554	1429	1641	3085	460	1641	1870	1435
Grp Volume(v), veh/h	226	588	221	93	450	239	112	318	319	298	575	297
Grp Sat Flow(s),veh/h/ln	1641	1777	1412	1641	1777	1429	1641	1777	1769	1641	1870	1435
Q Serve(g_s), s	12.5	13.8	9.0	4.9	10.6	8.4	6.1	14.9	15.0	16.2	25.8	8.4
Cycle Q Clear(g_c), s	12.5	13.8	9.0	4.9	10.6	8.4	6.1	14.9	15.0	16.2	25.8	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	249	864	343	193	741	298	160	461	459	339	688	528
V/C Ratio(X)	0.91	0.68	0.64	0.48	0.61	0.80	0.70	0.69	0.70	0.88	0.84	0.56
Avail Cap(c_a), veh/h	249	1274	506	249	1274	512	160	733	730	339	975	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	31.6	15.3	38.0	33.0	11.4	40.2	30.8	31.1	35.4	26.6	7.1
Incr Delay (d2), s/veh	33.2	1.0	2.0	1.9	0.8	5.0	12.5	1.9	1.9	22.4	4.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	5.5	4.0	1.9	4.3	4.7	2.8	6.0	6.1	8.0	10.9	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	32.6	17.3	39.9	33.8	16.4	52.8	32.6	33.0	57.8	31.0	8.0
LnGrp LOS	E	C	B	D	C	B	D	C	C	E	C	A
Approach Vol, veh/h		1035			782			749			1170	
Approach Delay, s/veh		37.8			29.2			35.8			32.0	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	27.9	14.8	26.4	13.0	37.9	18.0	23.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	17.0	36.0	12.0	31.0	7.0	46.0	12.0	31.0
Max Q Clear Time (g_c+I1), s	10.8	17.0	6.9	15.8	8.1	27.8	14.5	12.6
Green Ext Time (p_c), s	0.0	2.2	0.1	3.1	0.0	3.4	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	33.8
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	562	132	52	486	10	58	24	29	3	27	110
Future Volume (vph)	105	562	132	52	486	10	58	24	29	3	27	110
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.917			0.893	
Flt Protected	0.950			0.950			0.950				0.999	
Satd. Flow (prot)	1630	1863	1458	1630	1857	0	1630	1708	0	0	1662	0
Flt Permitted	0.950			0.950			0.950				0.999	
Satd. Flow (perm)	1630	1863	1458	1630	1857	0	1630	1708	0	0	1662	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	611	143	57	528	11	63	26	32	3	29	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	611	143	57	539	0	63	58	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	20.2

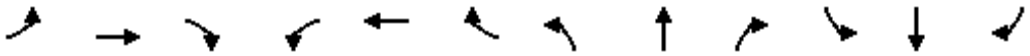
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	562	132	52	486	10	58	24	29	3	27	110
Future Vol, veh/h	105	562	132	52	486	10	58	24	29	3	27	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	305	-	425	300	-	-	125	-	-	-	-	-
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	114	611	143	57	528	11	63	26	32	3	29	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	539	0	0	754	0	0	1561	1492	611	1588	1630	534
Stage 1	-	-	-	-	-	-	839	839	-	648	648	-
Stage 2	-	-	-	-	-	-	722	653	-	940	982	-
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	1029	-	-	856	-	-	91	123	494	87	102	546
Stage 1	-	-	-	-	-	-	360	381	-	459	466	-
Stage 2	-	-	-	-	-	-	418	464	-	316	327	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1029	-	-	856	-	-	~ 46	102	494	57	85	546
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 46	102	-	57	85	-
Stage 1	-	-	-	-	-	-	320	339	-	408	435	-
Stage 2	-	-	-	-	-	-	284	433	-	243	291	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.9	226.1	41.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	46	180	1029	-	-	856	-	-	245
HCM Lane V/C Ratio	1.371	0.32	0.111	-	-	0.066	-	-	0.621
HCM Control Delay (s)	$ 401.6	34.1	8.9	-	-	9.5	-	-	41.1
HCM Lane LOS	F	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	6	1.3	0.4	-	-	0.2	-	-	3.7

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

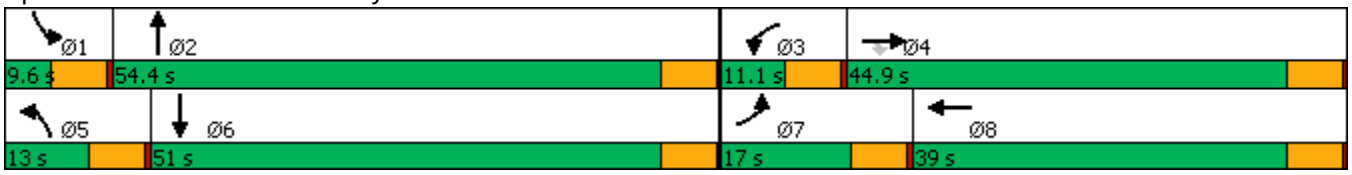


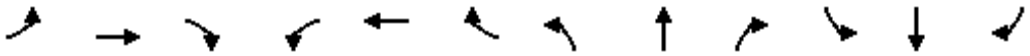
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137		2			3			22	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	221	35	221	8	158	1228	35	15	1495	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	221	35	229	0	158	1263	0	15	1780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	17.0	44.9	44.9	11.1	39.0		13.0	54.4		9.6	51.0	
Total Split (%)	14.2%	37.4%	37.4%	9.3%	32.5%		10.8%	45.3%		8.0%	42.5%	
Maximum Green (s)	11.5	39.4	39.4	5.6	33.5		7.5	48.9		4.1	45.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	13.0	31.1	31.1	7.1	20.5		9.0	56.6		5.6	47.2	
Actuated g/C Ratio	0.12	0.29	0.29	0.07	0.19		0.09	0.53		0.05	0.45	
v/c Ratio	1.35	0.38	0.43	0.32	0.64		1.14	0.67		0.17	1.15	
Control Delay	224.9	32.9	15.1	57.8	46.8		164.0	22.2		55.6	105.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	224.9	32.9	15.1	57.8	46.8		164.0	22.2		55.6	105.3	
LOS	F	C	B	E	D		F	C		E	F	
Approach Delay		101.6			48.3			38.0			104.9	
Approach LOS		F			D			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 105.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 78.0		Intersection LOS: E	
Intersection Capacity Utilization 96.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

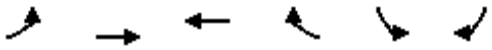




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	221	35	221	8	158	1228	35	15	1495	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	493	377	66	318	12	143	1811	52	46	1353	251
Arrive On Green	0.13	0.26	0.26	0.04	0.18	0.16	0.09	0.51	0.50	0.03	0.45	0.44
Sat Flow, veh/h	1641	1870	1432	1641	1792	65	1641	3525	100	1641	2977	553
Grp Volume(v), veh/h	271	208	221	35	0	229	158	619	644	15	876	904
Grp Sat Flow(s),veh/h/ln	1641	1870	1432	1641	0	1857	1641	1777	1849	1641	1777	1753
Q Serve(g_s), s	13.0	9.5	13.9	2.2	0.0	12.0	9.0	26.8	26.9	0.9	47.0	47.0
Cycle Q Clear(g_c), s	13.0	9.5	13.9	2.2	0.0	12.0	9.0	26.8	26.9	0.9	47.0	47.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.32
Lane Grp Cap(c), veh/h	206	493	377	66	0	330	143	913	950	46	808	797
V/C Ratio(X)	1.31	0.42	0.59	0.53	0.00	0.69	1.11	0.68	0.68	0.33	1.08	1.13
Avail Cap(c_a), veh/h	206	740	567	113	0	629	143	913	950	89	808	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	31.6	33.2	48.7	0.0	39.9	47.2	18.8	18.8	49.3	28.2	28.4
Incr Delay (d2), s/veh	171.2	0.6	1.4	6.5	0.0	2.6	106.6	2.0	2.0	4.0	57.2	75.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	4.1	4.6	1.0	0.0	5.4	7.7	9.9	10.4	0.4	30.1	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	216.4	32.1	34.6	55.2	0.0	42.5	153.8	20.8	20.8	53.3	85.4	104.0
LnGrp LOS	F	C	C	E	A	D	F	C	C	D	F	F
Approach Vol, veh/h		700			264			1421			1795	
Approach Delay, s/veh		104.2			44.2			35.6			94.5	
Approach LOS		F			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	57.1	8.1	31.2	13.0	51.0	17.0	22.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.1	48.9	5.6	39.4	7.5	45.5	11.5	33.5
Max Q Clear Time (g_c+I1), s	2.9	28.9	4.2	15.9	11.0	49.0	15.0	14.0
Green Ext Time (p_c), s	0.0	5.2	0.0	1.6	0.0	0.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	72.9
HCM 6th LOS	E

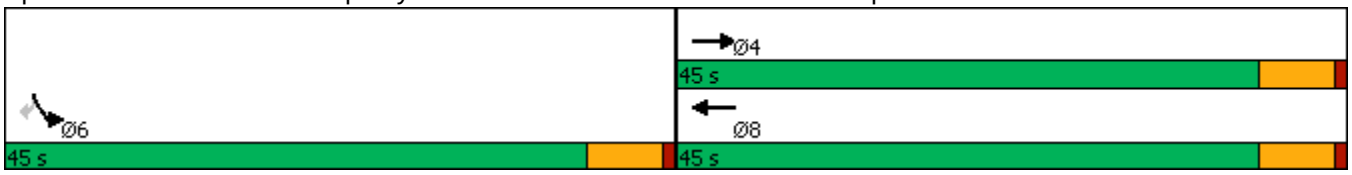


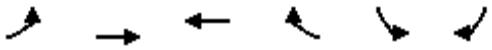
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	968	963	0	320	129
Future Volume (vph)	0	968	963	0	320	129
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						50
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1052	1047	0	348	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1052	1047	0	348	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		24.8	24.8		20.4	20.4
Actuated g/C Ratio		0.46	0.46		0.38	0.38
v/c Ratio		0.64	0.64		0.56	0.24
Control Delay		13.8	13.8		18.2	9.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.8	13.8		18.2	9.9
LOS		B	B		B	A
Approach Delay		13.8	13.8		15.8	
Approach LOS		B	B		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 53.7			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

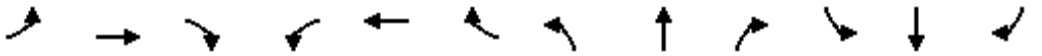




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	968	963	0	320	129
Future Volume (veh/h)	0	968	963	0	320	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	1052	1047	0	348	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1641	1641	0	544	484
Arrive On Green	0.00	0.46	0.46	0.00	0.33	0.33
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	1052	1047	0	348	140
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	8.8	8.7	0.0	7.0	2.7
Cycle Q Clear(g_c), s	0.0	8.8	8.7	0.0	7.0	2.7
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1641	1641	0	544	484
V/C Ratio(X)	0.00	0.64	0.64	0.00	0.64	0.29
Avail Cap(c_a), veh/h	0	3764	3764	0	1738	1546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.0	7.9	0.0	11.0	9.6
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	1.4	0.0	1.6	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	8.4	8.4	0.0	12.2	9.9
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h		1052	1047		488	
Approach Delay, s/veh		8.4	8.4		11.6	
Approach LOS		A	A		B	

Timer - Assigned Phs	4	6	8
Phs Duration (G+Y+Rc), s	21.9	16.8	21.9
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s	10.8	9.0	10.7
Green Ext Time (p_c), s	5.1	1.9	5.1

Intersection Summary	
HCM 6th Ctrl Delay	9.0
HCM 6th LOS	A

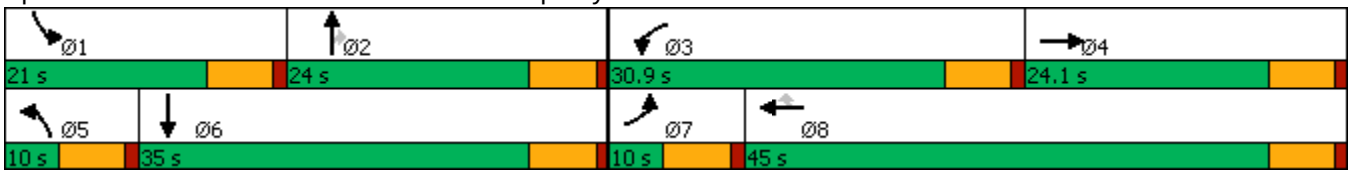


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	9	990	36	964	0	49	524	675	150	0
Future Volume (vph)	3	27	9	990	36	964	0	49	524	675	150	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.962				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1782	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.520					0.950		
Satd. Flow (perm)	1630	1782	0	1548	920	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				901			570			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	10	1076	39	1048	0	53	570	734	163	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	3	39	0	560	555	1048	0	53	570	734	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		30.9	45.0	45.0	10.0	24.0	24.0	21.0	35.0	
Total Split (%)	10.0%	24.1%		30.9%	45.0%	45.0%	10.0%	24.0%	24.0%	21.0%	35.0%	
Maximum Green (s)	4.0	18.1		24.9	39.0	39.0	4.0	18.0	18.0	15.0	29.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.1	10.8		33.2	33.2	41.4		12.0	12.0	17.2	33.2	
Actuated g/C Ratio	0.07	0.13		0.39	0.39	0.49		0.14	0.14	0.20	0.39	
v/c Ratio	0.03	0.16		0.92	0.83	0.90		0.20	0.82	1.14	0.22	
Control Delay	41.3	28.1		51.5	40.5	16.5		33.8	14.0	114.6	18.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	41.3	28.1		51.5	40.5	16.5		33.8	14.0	114.6	18.2	
LOS	D	C		D	D	B		C	B	F	B	
Approach Delay		29.0			31.7			15.7			97.0	
Approach LOS		C			C			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 84.3			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 44.7		Intersection LOS: D	
Intersection Capacity Utilization 83.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave



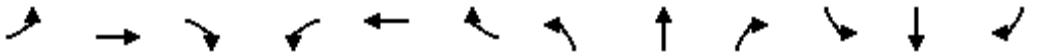
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	27	9	990	36	964	0	49	524	675	150	0
Future Volume (veh/h)	3	27	9	990	36	964	0	49	524	675	150	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	3	29	10	1104	0	1048	0	53	570	734	163	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	39	225	78	917	0	611	2	388	303	562	796	0
Arrive On Green	0.02	0.17	0.15	0.28	0.00	0.43	0.00	0.21	0.21	0.18	0.43	0.00
Sat Flow, veh/h	1641	1320	455	3281	0	1436	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	3	0	39	1104	0	1048	0	53	570	734	163	0
Grp Sat Flow(s),veh/h/ln	1641	0	1775	1641	0	1436	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.2	0.0	1.8	26.9	0.0	41.0	0.0	2.2	20.0	17.0	5.3	0.0
Cycle Q Clear(g_c), s	0.2	0.0	1.8	26.9	0.0	41.0	0.0	2.2	20.0	17.0	5.3	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	39	0	302	917	0	611	2	388	303	562	796	0
V/C Ratio(X)	0.08	0.00	0.13	1.20	0.00	1.71	0.00	0.14	1.88	1.31	0.20	0.00
Avail Cap(c_a), veh/h	102	0	370	917	0	611	102	388	303	562	796	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.0	0.0	34.1	34.7	0.0	27.7	0.0	31.1	38.2	39.7	17.4	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.2	102.4	0.0	328.4	0.0	0.2	408.3	150.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	22.8	0.0	67.9	0.0	1.0	41.0	17.9	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	0.0	34.3	137.2	0.0	356.1	0.0	31.3	446.5	190.1	17.5	0.0
LnGrp LOS	D	A	C	F	A	F	A	C	F	F	B	A
Approach Vol, veh/h		42			2152			623			897	
Approach Delay, s/veh		35.2			243.8			411.2			158.7	
Approach LOS		D			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	24.0	30.9	20.4	0.0	45.0	6.3	45.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	18.0	24.9	18.1	4.0	29.0	4.0	39.0
Max Q Clear Time (g_c+I1), s	10.9	22.0	28.9	3.8	0.0	7.3	2.2	43.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	249.0
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

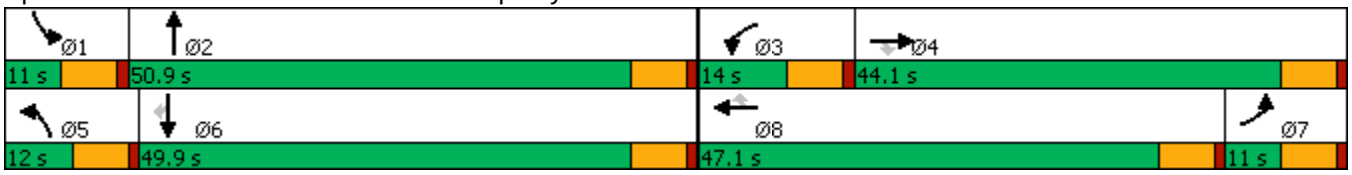


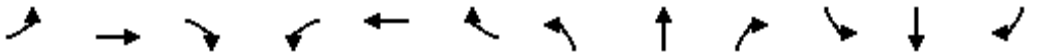
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	728	1044	181	111	1126	300	173	353	159	276	126	461
Future Volume (vph)	728	1044	181	111	1126	300	173	353	159	276	126	461
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3355	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3355	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			150		71				231
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	791	1135	197	121	1224	326	188	384	173	300	137	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	1135	197	121	1224	326	188	557	0	300	137	501
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	16.2	38.5	38.5	10.2	32.5	32.5	8.1	24.2		7.1	23.2	23.2
Actuated g/C Ratio	0.17	0.40	0.40	0.11	0.34	0.34	0.08	0.25		0.07	0.24	0.24
v/c Ratio	1.49	0.80	0.30	0.70	0.71	0.56	1.37	0.62		1.29	0.31	0.65
Control Delay	260.6	32.2	7.2	67.3	30.8	18.1	242.2	30.3		195.4	31.0	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	260.6	32.2	7.2	67.3	30.8	18.1	242.2	30.3		195.4	31.0	20.7
LOS	F	C	A	E	C	B	F	C		F	C	C
Approach Delay		115.0			31.0			83.8			78.1	
Approach LOS		F			C			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 96.3			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.49			
Intersection Signal Delay: 78.8		Intersection LOS: E	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Hillman St & Prosperity Ave

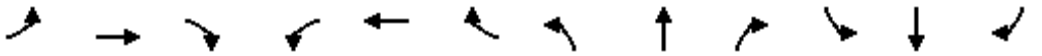




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	1044	181	111	1126	300	173	353	159	276	126	461
Future Volume (veh/h)	728	1044	181	111	1126	300	173	353	159	276	126	461
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	791	1135	197	121	1224	326	188	384	173	300	137	501
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	1364	544	182	1779	500	146	592	262	248	445	591
Arrive On Green	0.15	0.38	0.38	0.11	0.35	0.35	0.09	0.25	0.23	0.08	0.24	0.24
Sat Flow, veh/h	3183	3554	1419	1641	5106	1434	1641	2377	1054	3183	1870	2484
Grp Volume(v), veh/h	791	1135	197	121	1224	326	188	285	272	300	137	501
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1434	1641	1777	1655	1591	1870	1242
Q Serve(g_s), s	13.1	25.9	8.9	6.3	18.4	11.6	8.0	12.9	13.3	7.0	5.4	10.9
Cycle Q Clear(g_c), s	13.1	25.9	8.9	6.3	18.4	11.6	8.0	12.9	13.3	7.0	5.4	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	466	1364	544	182	1779	500	146	442	412	248	445	591
V/C Ratio(X)	1.70	0.83	0.36	0.67	0.69	0.65	1.28	0.65	0.66	1.21	0.31	0.85
Avail Cap(c_a), veh/h	466	1589	634	183	2454	689	146	929	865	248	957	1271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	25.0	19.8	38.3	25.0	11.2	40.8	30.1	30.9	41.3	28.1	13.1
Incr Delay (d2), s/veh	323.6	3.5	0.4	8.7	0.5	1.4	169.9	1.6	1.8	124.9	0.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.6	10.1	2.6	2.8	6.6	3.1	9.9	5.2	5.1	6.9	2.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	361.9	28.5	20.2	47.0	25.5	12.7	210.7	31.7	32.7	166.2	28.5	16.6
LnGrp LOS	F	C	C	D	C	B	F	C	C	F	C	B
Approach Vol, veh/h		2123			1671			745			938	
Approach Delay, s/veh		151.9			24.6			77.2			66.2	
Approach LOS		F			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	26.3	13.9	38.4	12.0	25.3	17.1	35.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	8.0	38.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	9.0	15.3	8.3	27.9	10.0	12.9	15.1	20.4
Green Ext Time (p_c), s	0.0	2.1	0.0	4.5	0.0	3.1	0.0	7.4

Intersection Summary	
HCM 6th Ctrl Delay	88.2
HCM 6th LOS	F

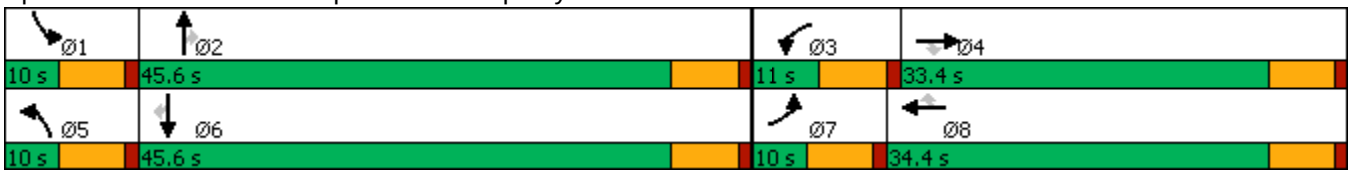


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1046	455	118	913	80	220	164	108	126	221	76
Future Volume (vph)	186	1046	455	118	913	80	220	164	108	126	221	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	5085	1413	1630	1863	1418	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			236			164			164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	1137	495	128	992	87	239	178	117	137	240	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1137	495	128	992	87	239	178	117	137	240	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	10.0	33.4	33.4	11.0	34.4	34.4	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (%)	10.0%	33.4%	33.4%	11.0%	34.4%	34.4%	10.0%	45.6%	45.6%	10.0%	45.6%	45.6%
Maximum Green (s)	4.0	27.4	27.4	5.0	28.4	28.4	4.0	39.6	39.6	4.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	6.1	29.9	29.9	7.1	30.9	30.9	6.1	19.8	19.8	6.1	19.8	19.8
Actuated g/C Ratio	0.08	0.38	0.38	0.09	0.39	0.39	0.08	0.25	0.25	0.08	0.25	0.25
v/c Ratio	1.62	0.85	0.73	0.88	0.50	0.13	1.91	0.38	0.24	1.10	0.51	0.17
Control Delay	339.7	32.2	20.1	88.4	20.9	0.4	463.8	25.8	2.3	148.1	28.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	339.7	32.2	20.1	88.4	20.9	0.4	463.8	25.8	2.3	148.1	28.5	0.8
LOS	F	C	C	F	C	A	F	C	A	F	C	A
Approach Delay		62.8			26.6			216.7			59.1	
Approach LOS		E			C			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 79.2			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.91			
Intersection Signal Delay: 71.9		Intersection LOS: E	
Intersection Capacity Utilization 77.5%		ICU Level of Service D	
Analysis Period (min) 15			

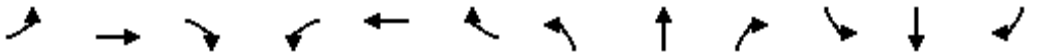
Splits and Phases: 5: Laspina St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	1046	455	118	913	80	220	164	108	126	221	76
Future Volume (veh/h)	186	1046	455	118	913	80	220	164	108	126	221	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	202	1137	495	128	992	87	239	178	117	137	240	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	1388	554	154	2062	573	132	413	311	132	413	316
Arrive On Green	0.08	0.39	0.39	0.09	0.40	0.40	0.08	0.22	0.22	0.08	0.22	0.22
Sat Flow, veh/h	1641	3554	1419	1641	5106	1419	1641	1870	1410	1641	1870	1430
Grp Volume(v), veh/h	202	1137	495	128	992	87	239	178	117	137	240	83
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1702	1419	1641	1870	1410	1641	1870	1430
Q Serve(g_s), s	6.0	21.4	24.4	5.7	10.7	2.9	6.0	6.1	5.3	6.0	8.6	3.6
Cycle Q Clear(g_c), s	6.0	21.4	24.4	5.7	10.7	2.9	6.0	6.1	5.3	6.0	8.6	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	1388	554	154	2062	573	132	413	311	132	413	316
V/C Ratio(X)	1.53	0.82	0.89	0.83	0.48	0.15	1.81	0.43	0.38	1.04	0.58	0.26
Avail Cap(c_a), veh/h	132	1400	559	154	2080	578	132	1043	786	132	1043	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	20.4	21.3	33.2	16.5	14.1	34.3	25.0	24.7	34.3	26.0	24.0
Incr Delay (d2), s/veh	273.4	4.0	16.6	30.4	0.2	0.1	393.5	0.7	0.7	89.0	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	8.0	9.1	3.3	3.5	0.8	16.6	2.5	1.6	5.4	3.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	307.7	24.3	37.9	63.6	16.6	14.2	427.8	25.7	25.4	123.3	27.3	24.5
LnGrp LOS	F	C	D	E	B	B	F	C	C	F	C	C
Approach Vol, veh/h		1834			1207			534			460	
Approach Delay, s/veh		59.2			21.4			205.6			55.4	
Approach LOS		E			C			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	20.5	11.0	33.1	10.0	20.5	10.0	34.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	39.6	5.0	27.4	4.0	39.6	4.0	28.4
Max Q Clear Time (g_c+I1), s	8.0	8.1	7.7	26.4	8.0	10.6	8.0	12.7
Green Ext Time (p_c), s	0.0	1.1	0.0	0.8	0.0	1.1	0.0	4.4

Intersection Summary	
HCM 6th Ctrl Delay	66.9
HCM 6th LOS	E

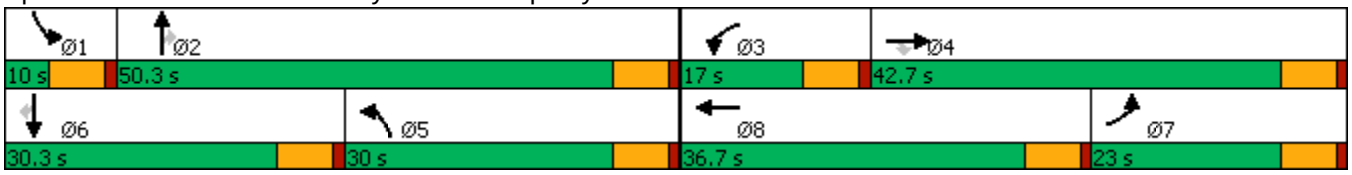


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	351	513	215	312	68	329	881	66	90	1193	375
Future Volume (vph)	353	351	513	215	312	68	329	881	66	90	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1806	0	1630	3539	1429	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			504		9				191			252
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	382	558	234	339	74	358	958	72	98	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	382	558	234	413	0	358	958	72	98	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	17.0	36.7		30.0	50.3	50.3	10.0	30.3	30.3
Total Split (%)	19.2%	35.6%	35.6%	14.2%	30.6%		25.0%	41.9%	41.9%	8.3%	25.3%	25.3%
Maximum Green (s)	17.0	36.7	36.7	11.0	30.7		24.0	44.3	44.3	4.0	24.3	24.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	19.0	36.5	36.5	13.0	30.5		26.0	46.4	46.4	6.0	26.3	26.3
Actuated g/C Ratio	0.16	0.31	0.31	0.11	0.26		0.22	0.39	0.39	0.05	0.22	0.22
v/c Ratio	1.46	0.66	0.71	1.31	0.87		0.99	0.69	0.11	1.18	1.64	0.79
Control Delay	263.9	41.6	10.1	213.1	60.8		93.2	33.3	0.3	206.0	325.9	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	263.9	41.6	10.1	213.1	60.8		93.2	33.3	0.3	206.0	325.9	29.0
LOS	F	D	B	F	E		F	C	A	F	F	C
Approach Delay		92.8			115.9			47.0			252.2	
Approach LOS		F			F			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 117.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.64			
Intersection Signal Delay: 139.1		Intersection LOS: F	
Intersection Capacity Utilization 108.2%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	351	513	215	312	68	329	881	66	90	1193	375
Future Volume (veh/h)	353	351	513	215	312	68	329	881	66	90	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	382	558	234	339	74	358	958	72	98	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	578	443	181	382	83	362	1398	565	84	794	320
Arrive On Green	0.16	0.31	0.31	0.11	0.26	0.24	0.22	0.39	0.39	0.05	0.22	0.22
Sat Flow, veh/h	1641	1870	1433	1641	1481	323	1641	3554	1435	1641	3554	1430
Grp Volume(v), veh/h	384	382	558	234	0	413	358	958	72	98	1297	408
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1804	1641	1777	1435	1641	1777	1430
Q Serve(g_s), s	19.0	20.9	19.4	13.0	0.0	25.9	25.6	26.3	3.8	6.0	26.3	26.3
Cycle Q Clear(g_c), s	19.0	20.9	19.4	13.0	0.0	25.9	25.6	26.3	3.8	6.0	26.3	26.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	578	443	181	0	466	362	1398	565	84	794	320
V/C Ratio(X)	1.45	0.66	1.26	1.29	0.00	0.89	0.99	0.69	0.13	1.17	1.63	1.28
Avail Cap(c_a), veh/h	265	615	471	181	0	501	362	1398	565	84	794	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	35.3	11.5	52.3	0.0	42.2	45.7	29.6	22.8	55.8	45.7	45.7
Incr Delay (d2), s/veh	222.3	2.4	133.8	165.8	0.0	16.5	43.8	1.4	0.1	151.9	290.6	146.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.7	9.3	21.6	13.5	0.0	13.0	14.2	10.6	1.2	5.9	43.0	21.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	271.6	37.7	145.4	218.1	0.0	58.7	89.5	31.0	22.9	207.7	336.3	192.3
LnGrp LOS	F	D	F	F	A	E	F	C	C	F	F	F
Approach Vol, veh/h		1324			647			1388			1803	
Approach Delay, s/veh		150.9			116.4			45.7			296.7	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	50.3	17.0	40.4	30.0	30.3	23.0	34.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	44.3	11.0	36.7	24.0	24.3	17.0	30.7
Max Q Clear Time (g_c+I1), s	8.0	28.3	15.0	22.9	27.6	28.3	21.0	27.9
Green Ext Time (p_c), s	0.0	4.2	0.0	3.5	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	169.2
HCM 6th LOS	F



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	489	34	63	494	29	37
Future Volume (vph)	489	34	63	494	29	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	532	37	68	537	32	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	532	37	68	537	32	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

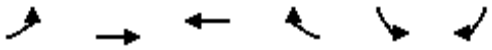
Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	489	34	63	494	29	37
Future Vol, veh/h	489	34	63	494	29	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	532	37	68	537	32	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	569	0	1205	532
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	673	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1003	-	203	547
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1003	-	189	547
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	473	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	189	547	-	-	1003	-
HCM Lane V/C Ratio	0.167	0.074	-	-	0.068	-
HCM Control Delay (s)	27.8	12.1	-	-	8.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0.2	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	123	358	276	39	29	215
Future Volume (vph)	123	358	276	39	29	215
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.881	
Flt Protected		0.987			0.994	
Satd. Flow (prot)	0	1839	1831	0	1502	0
Flt Permitted		0.987			0.994	
Satd. Flow (perm)	0	1839	1831	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	389	300	42	32	234
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	523	342	0	266	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	358	276	39	29	215
Future Vol, veh/h	123	358	276	39	29	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	389	300	42	32	234

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	342	0	-	0	978	321
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	657	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1217	-	-	-	278	720
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1217	-	-	-	239	720
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	516	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1217	-	-	-	581
HCM Lane V/C Ratio	0.11	-	-	-	0.456
HCM Control Delay (s)	8.3	0	-	-	16.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.4



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	217	1568	94	289	1905
Future Volume (vph)	0	217	1568	94	289	1905
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	236	1704	102	314	2071
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	236	1704	102	314	2071
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

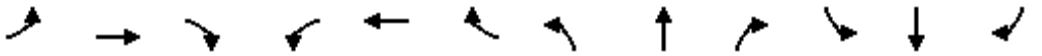
Intersection	
Int Delay, s/veh	7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	217	1568	94	289	1905
Future Vol, veh/h	0	217	1568	94	289	1905
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None		None		None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	236	1704	102	314	2071

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	852	0	0	1806	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	303	-	-	337	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	303	-	-	337	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	48.6	0	9.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	303	337	-
HCM Lane V/C Ratio	-	-	0.778	0.932	-
HCM Control Delay (s)	-	-	48.6	69.1	-
HCM Lane LOS	-	-	E	F	-
HCM 95th %tile Q(veh)	-	-	6.1	9.5	-

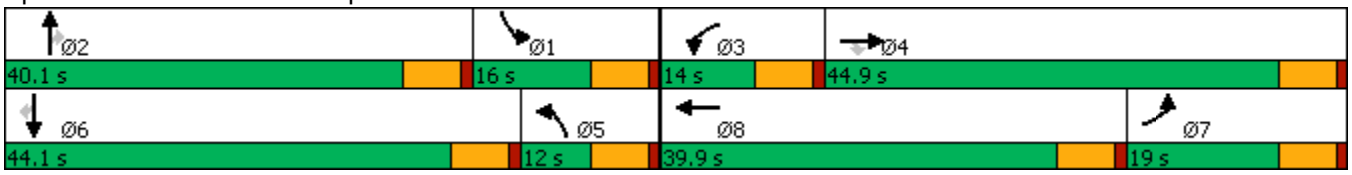


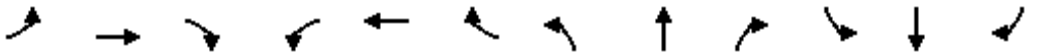
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	1177	315	129	893	101	109	281	72	117	385	93
Future Volume (vph)	196	1177	315	129	893	101	109	281	72	117	385	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	3474	0	1630	1863	1432	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158		11				199			199
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1279	342	140	971	110	118	305	78	127	418	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1279	342	140	1081	0	118	305	78	127	418	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	19.0	44.9	44.9	14.0	39.9		12.0	40.1	40.1	16.0	44.1	44.1
Total Split (%)	16.5%	39.0%	39.0%	12.2%	34.7%		10.4%	34.9%	34.9%	13.9%	38.3%	38.3%
Maximum Green (s)	13.0	38.9	38.9	8.0	33.9		6.0	34.1	34.1	10.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	15.1	41.0	41.0	10.0	36.0		8.0	24.8	24.8	13.5	30.2	30.2
Actuated g/C Ratio	0.14	0.39	0.39	0.09	0.34		0.08	0.24	0.24	0.13	0.29	0.29
v/c Ratio	0.92	0.93	0.53	0.90	0.91		0.96	0.70	0.16	0.61	0.78	0.18
Control Delay	87.9	44.5	17.2	100.7	45.5		121.3	45.5	0.7	58.8	45.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.9	44.5	17.2	100.7	45.5		121.3	45.5	0.7	58.8	45.4	0.7
LOS	F	D	B	F	D		F	D	A	E	D	A
Approach Delay		44.5			51.8			56.4			41.0	
Approach LOS		D			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 105.4			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 47.5		Intersection LOS: D	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 10: Laspina St & Tulare Ave

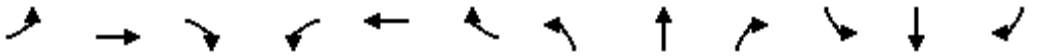




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	1177	315	129	893	101	109	281	72	117	385	93
Future Volume (veh/h)	196	1177	315	129	893	101	109	281	72	117	385	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	213	1279	342	140	971	110	118	305	78	127	418	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1392	556	159	1080	122	127	415	317	222	523	400
Arrive On Green	0.15	0.39	0.39	0.10	0.34	0.32	0.08	0.22	0.22	0.14	0.28	0.28
Sat Flow, veh/h	1641	3554	1419	1641	3206	363	1641	1870	1430	1641	1870	1432
Grp Volume(v), veh/h	213	1279	342	140	538	543	118	305	78	127	418	101
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1777	1792	1641	1870	1430	1641	1870	1432
Q Serve(g_s), s	13.1	35.4	13.6	8.7	29.8	29.8	7.4	15.7	3.4	7.5	21.4	5.7
Cycle Q Clear(g_c), s	13.1	35.4	13.6	8.7	29.8	29.8	7.4	15.7	3.4	7.5	21.4	5.7
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	1392	556	159	599	604	127	415	317	222	523	400
V/C Ratio(X)	0.86	0.92	0.62	0.88	0.90	0.90	0.93	0.74	0.25	0.57	0.80	0.25
Avail Cap(c_a), veh/h	248	1406	561	159	617	622	127	653	499	222	726	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	29.9	11.7	46.1	32.6	32.8	47.4	37.4	17.5	41.9	34.6	28.9
Incr Delay (d2), s/veh	24.6	9.9	2.0	39.6	15.8	15.8	58.4	2.5	0.4	3.5	4.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	15.3	3.9	5.1	14.2	14.4	4.9	7.0	1.5	3.1	9.6	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.3	39.8	13.7	85.7	48.4	48.5	105.8	39.9	17.9	45.5	39.0	29.2
LnGrp LOS	E	D	B	F	D	D	F	D	B	D	D	C
Approach Vol, veh/h		1834			1221			501			646	
Approach Delay, s/veh		38.1			52.7			52.0			38.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	26.9	14.0	44.5	12.0	32.9	19.6	38.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	34.1	8.0	38.9	6.0	38.1	13.0	33.9
Max Q Clear Time (g_c+I1), s	9.5	17.7	10.7	37.4	9.4	23.4	15.1	31.8
Green Ext Time (p_c), s	0.0	1.2	0.0	1.1	0.0	1.7	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

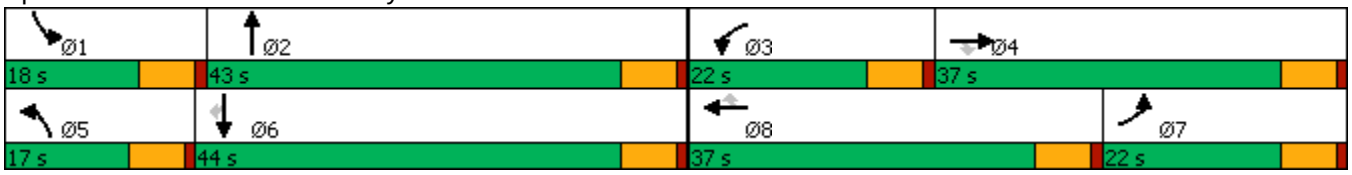


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	802	346	114	612	359	175	869	104	360	901	465
Future Volume (vph)	354	802	346	114	612	359	175	869	104	360	901	465
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			285			207		11				377
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	872	376	124	665	390	190	945	113	391	979	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	385	872	376	124	665	390	190	1058	0	391	979	505
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	37.0	37.0	22.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	30.8%	30.8%	18.3%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	31.0	31.0	16.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.4	32.5	32.5	15.2	29.3	29.3	13.0	39.0		14.0	40.0	40.0
Actuated g/C Ratio	0.16	0.28	0.28	0.13	0.25	0.25	0.11	0.33		0.12	0.34	0.34
v/c Ratio	1.50	0.89	0.63	0.58	0.75	0.76	1.05	0.91		2.01	1.53	0.68
Control Delay	280.2	52.6	14.8	59.5	46.1	28.8	131.3	49.3		496.0	277.8	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	280.2	52.6	14.8	59.5	46.1	28.8	131.3	49.3		496.0	277.8	13.9
LOS	F	D	B	E	D	C	F	D		F	F	B
Approach Delay		97.6			41.8			61.8			252.2	
Approach LOS		F			D			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 116.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.01			
Intersection Signal Delay: 127.8		Intersection LOS: F	
Intersection Capacity Utilization 110.9%		ICU Level of Service H	
Analysis Period (min) 15			

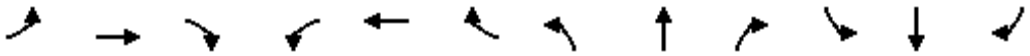
Splits and Phases: 11: Mooney Blvd & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	802	346	114	612	359	175	869	104	360	901	465
Future Volume (veh/h)	354	802	346	114	612	359	175	869	104	360	901	465
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	385	872	376	124	665	390	190	945	113	391	979	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	1042	415	176	868	350	185	1079	129	200	650	498
Arrive On Green	0.16	0.29	0.29	0.11	0.24	0.24	0.11	0.34	0.32	0.12	0.35	0.35
Sat Flow, veh/h	1641	3554	1415	1641	3554	1431	1641	3184	381	1641	1870	1434
Grp Volume(v), veh/h	385	872	376	124	665	390	190	527	531	391	979	505
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1431	1641	1777	1788	1641	1870	1434
Q Serve(g_s), s	18.0	26.5	29.4	8.4	20.0	19.7	13.0	32.1	32.2	14.0	40.0	24.0
Cycle Q Clear(g_c), s	18.0	26.5	29.4	8.4	20.0	19.7	13.0	32.1	32.2	14.0	40.0	24.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	257	1042	415	176	868	350	185	602	606	200	650	498
V/C Ratio(X)	1.50	0.84	0.91	0.70	0.77	1.12	1.03	0.88	0.88	1.96	1.51	1.01
Avail Cap(c_a), veh/h	257	1042	415	257	1019	410	185	602	606	200	650	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	38.1	39.1	49.6	40.4	21.4	51.1	35.8	36.0	50.6	37.6	13.5
Incr Delay (d2), s/veh	244.7	6.1	23.1	5.1	3.0	81.4	72.9	13.7	13.6	449.5	235.8	43.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.4	11.6	12.2	3.5	8.6	13.9	8.8	15.1	15.3	30.4	59.4	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	293.3	44.2	62.2	54.7	43.5	102.8	124.0	49.4	49.6	500.1	273.4	57.2
LnGrp LOS	F	D	E	D	D	F	F	D	D	F	F	F
Approach Vol, veh/h		1633			1179			1248			1875	
Approach Delay, s/veh		107.0			64.3			60.9			262.4	
Approach LOS		F			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	43.0	16.3	37.8	17.0	44.0	22.0	32.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	16.0	31.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	16.0	34.2	10.4	31.4	15.0	42.0	20.0	22.0
Green Ext Time (p_c), s	0.0	1.3	0.1	0.0	0.0	0.0	0.0	3.2

Intersection Summary	
HCM 6th Ctrl Delay	137.9
HCM 6th LOS	F



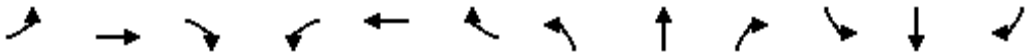
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	835	161	89	828	7	99	37	49	0	39	46
Future Volume (vph)	22	835	161	89	828	7	99	37	49	0	39	46
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.999			0.964			0.927	
Flt Protected		0.999			0.995			0.974				
Satd. Flow (prot)	0	1822	0	0	1852	0	0	1749	0	0	1727	0
Flt Permitted		0.999			0.995			0.974				
Satd. Flow (perm)	0	1822	0	0	1852	0	0	1749	0	0	1727	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	908	175	97	900	8	108	40	53	0	42	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1107	0	0	1005	0	0	201	0	0	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	27.9
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1107	1005	201	92
Demand Flow Rate, veh/h	1128	1025	205	94
Vehicles Circulating, veh/h	142	175	950	1127
Vehicles Exiting, veh/h	1079	980	320	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	33.6	26.1	13.4	11.8
Approach LOS	D	D	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1128	1025	205	94
Cap Entry Lane, veh/h	1194	1154	524	437
Entry HV Adj Factor	0.981	0.980	0.981	0.980
Flow Entry, veh/h	1107	1005	201	92
Cap Entry, veh/h	1171	1132	514	429
V/C Ratio	0.945	0.888	0.391	0.215
Control Delay, s/veh	33.6	26.1	13.4	11.8
LOS	D	D	B	B
95th %tile Queue, veh	17	13	2	1

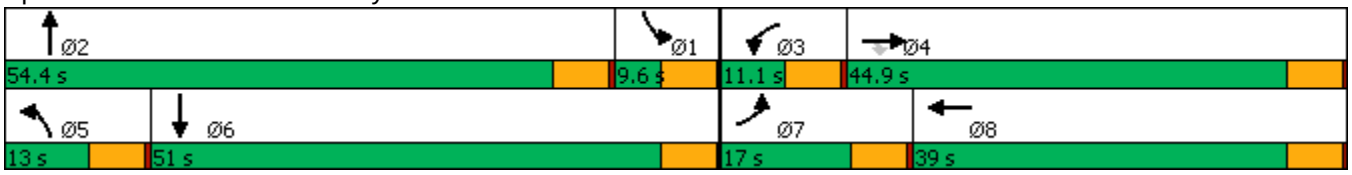


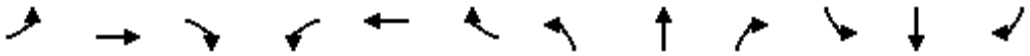
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3438	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3438	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			211		2			3			21	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	227	35	221	8	164	1262	35	15	1534	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	227	35	229	0	164	1297	0	15	1819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	17.0	44.9	44.9	11.1	39.0		13.0	54.4		9.6	51.0	
Total Split (%)	14.2%	37.4%	37.4%	9.3%	32.5%		10.8%	45.3%		8.0%	42.5%	
Maximum Green (s)	11.5	39.4	39.4	5.6	33.5		7.5	48.9		4.1	45.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	13.0	31.1	31.1	7.1	20.5		9.0	56.6		5.6	47.2	
Actuated g/C Ratio	0.12	0.29	0.29	0.07	0.19		0.09	0.53		0.05	0.45	
v/c Ratio	1.35	0.38	0.40	0.32	0.64		1.18	0.69		0.17	1.18	
Control Delay	224.9	32.9	7.4	57.8	46.8		177.6	22.7		55.6	115.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	224.9	32.9	7.4	57.8	46.8		177.6	22.7		55.6	115.8	
LOS	F	C	A	E	D		F	C		E	F	
Approach Delay		98.4			48.3			40.1			115.3	
Approach LOS		F			D			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 105.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 82.6		Intersection LOS: F	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

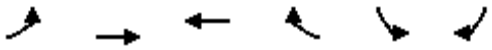




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	227	35	221	8	164	1262	35	15	1534	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	493	377	66	318	12	143	1439	40	220	1360	246
Arrive On Green	0.13	0.26	0.26	0.04	0.18	0.16	0.09	0.41	0.39	0.13	0.45	0.44
Sat Flow, veh/h	1641	1870	1432	1641	1792	65	1641	3528	98	1641	2992	540
Grp Volume(v), veh/h	271	208	227	35	0	229	164	635	662	15	893	926
Grp Sat Flow(s),veh/h/ln	1641	1870	1432	1641	0	1857	1641	1777	1849	1641	1777	1755
Q Serve(g_s), s	13.0	9.5	14.3	2.2	0.0	12.0	9.0	34.1	34.1	0.8	47.0	47.0
Cycle Q Clear(g_c), s	13.0	9.5	14.3	2.2	0.0	12.0	9.0	34.1	34.1	0.8	47.0	47.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.31
Lane Grp Cap(c), veh/h	206	493	377	66	0	330	143	725	754	220	808	798
V/C Ratio(X)	1.31	0.42	0.60	0.53	0.00	0.69	1.15	0.88	0.88	0.07	1.11	1.16
Avail Cap(c_a), veh/h	206	740	567	113	0	629	143	866	902	220	808	798
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	31.6	33.3	48.7	0.0	39.9	47.2	28.2	28.3	39.1	28.2	28.4
Incr Delay (d2), s/veh	171.2	0.6	1.5	6.5	0.0	2.6	120.6	8.8	8.6	0.1	64.8	85.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	4.1	4.8	1.0	0.0	5.4	8.3	14.6	15.2	0.3	31.8	36.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	216.4	32.1	34.9	55.2	0.0	42.5	167.8	37.1	36.9	39.3	92.9	114.1
LnGrp LOS	F	C	C	E	A	D	F	D	D	D	F	F
Approach Vol, veh/h		706			264			1461			1834	
Approach Delay, s/veh		103.7			44.2			51.7			103.2	
Approach LOS		F			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.8	46.2	8.1	31.2	13.0	51.0	17.0	22.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.1	48.9	5.6	39.4	7.5	45.5	11.5	33.5
Max Q Clear Time (g_c+I1), s	2.8	36.1	4.2	16.3	11.0	49.0	15.0	14.0
Green Ext Time (p_c), s	0.0	4.5	0.0	1.6	0.0	0.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	82.0
HCM 6th LOS	F

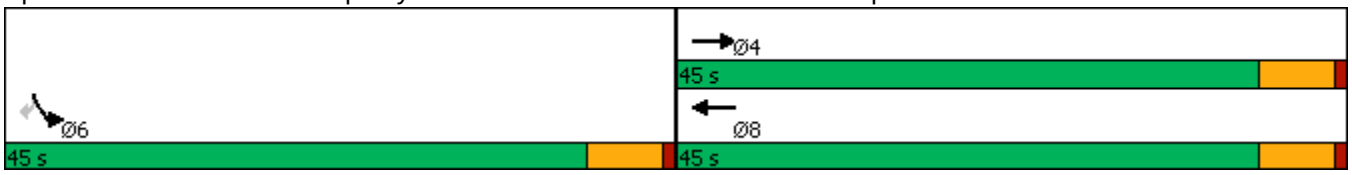


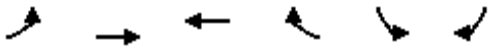
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	984	1031	0	359	129
Future Volume (vph)	0	984	1031	0	359	129
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						40
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1070	1121	0	390	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1070	1121	0	390	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		27.8	27.8		23.1	23.1
Actuated g/C Ratio		0.47	0.47		0.39	0.39
v/c Ratio		0.65	0.68		0.62	0.24
Control Delay		14.9	15.4		20.6	11.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		14.9	15.4		20.6	11.4
LOS		B	B		C	B
Approach Delay		14.9	15.4		18.1	
Approach LOS		B	B		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 59.4			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

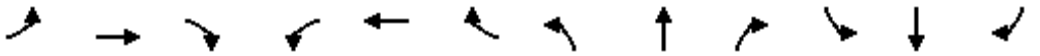




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	984	1031	0	359	129
Future Volume (veh/h)	0	984	1031	0	359	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	1070	1121	0	390	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1662	1662	0	567	504
Arrive On Green	0.00	0.47	0.47	0.00	0.35	0.35
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	1070	1121	0	390	140
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	9.8	10.5	0.0	8.7	3.0
Cycle Q Clear(g_c), s	0.0	9.8	10.5	0.0	8.7	3.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1662	1662	0	567	504
V/C Ratio(X)	0.00	0.64	0.67	0.00	0.69	0.28
Avail Cap(c_a), veh/h	0	3405	3405	0	1572	1399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.7	8.9	0.0	12.0	10.1
Incr Delay (d2), s/veh	0.0	0.4	0.5	0.0	1.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.9	2.0	0.0	2.2	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	9.1	9.3	0.0	13.5	10.4
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h		1070	1121		530	
Approach Delay, s/veh		9.1	9.3		12.7	
Approach LOS		A	A		B	

Timer - Assigned Phs	4	6	8
Phs Duration (G+Y+Rc), s	24.0	18.8	24.0
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s	11.8	10.7	12.5
Green Ext Time (p_c), s	5.2	2.0	5.5

Intersection Summary	
HCM 6th Ctrl Delay	9.9
HCM 6th LOS	A

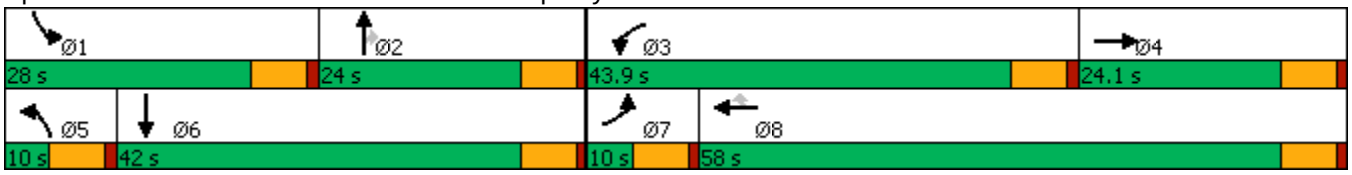


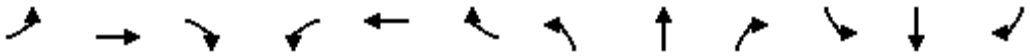
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	9	1021	36	1020	0	49	557	718	150	0
Future Volume (vph)	3	27	9	1021	36	1020	0	49	557	718	150	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.962				0.850			0.850			
Flt Protected	0.950			0.950	0.955					0.950		
Satd. Flow (prot)	1630	1781	0	1548	1690	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.521					0.950		
Satd. Flow (perm)	1630	1781	0	1548	922	1425	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				910			605			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	10	1110	39	1109	0	53	605	780	163	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	3	39	0	577	572	1109	0	53	605	780	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		43.9	58.0	58.0	10.0	24.0	24.0	28.0	42.0	
Total Split (%)	8.3%	20.1%		36.6%	48.3%	48.3%	8.3%	20.0%	20.0%	23.3%	35.0%	
Maximum Green (s)	4.0	18.1		37.9	52.0	52.0	4.0	18.0	18.0	22.0	36.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.0	10.9		46.1	46.1	54.3		12.9	12.9	24.1	41.1	
Actuated g/C Ratio	0.06	0.10		0.44	0.44	0.52		0.12	0.12	0.23	0.39	
v/c Ratio	0.03	0.20		0.85	0.77	0.94		0.23	0.85	1.08	0.22	
Control Delay	52.3	37.1		43.6	37.2	21.9		44.2	16.4	95.3	22.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	52.3	37.1		43.6	37.2	21.9		44.2	16.4	95.3	22.6	
LOS	D	D		D	D	C		D	B	F	C	
Approach Delay		38.2			31.3			18.6			82.7	
Approach LOS		D			C			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 105.2			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 41.7		Intersection LOS: D	
Intersection Capacity Utilization 87.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave





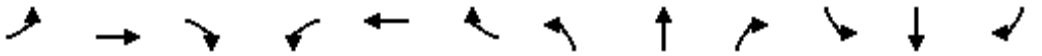
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	27	9	1021	36	1020	0	49	557	718	150	0
Future Volume (veh/h)	3	27	9	1021	36	1020	0	49	557	718	150	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	3	29	10	1138	0	1109	0	53	605	780	163	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	33	187	64	1125	0	667	1	321	251	656	771	0
Arrive On Green	0.02	0.14	0.12	0.34	0.00	0.46	0.00	0.17	0.17	0.21	0.41	0.00
Sat Flow, veh/h	1641	1319	455	3281	0	1436	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	3	0	39	1138	0	1109	0	53	605	780	163	0
Grp Sat Flow(s),veh/h/ln	1641	0	1773	1641	0	1436	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.2	0.0	2.3	39.9	0.0	54.0	0.0	2.8	20.0	24.0	6.5	0.0
Cycle Q Clear(g_c), s	0.2	0.0	2.3	39.9	0.0	54.0	0.0	2.8	20.0	24.0	6.5	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	33	0	251	1125	0	667	1	321	251	656	771	0
V/C Ratio(X)	0.09	0.00	0.16	1.01	0.00	1.66	0.00	0.16	2.41	1.19	0.21	0.00
Avail Cap(c_a), veh/h	85	0	306	1125	0	667	85	321	251	656	771	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.9	0.0	44.1	38.2	0.0	31.2	0.0	41.1	48.2	46.2	22.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.3	29.7	0.0	305.3	0.0	0.2	647.1	99.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.0	19.4	0.0	73.1	0.0	1.3	52.0	18.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	0.0	44.4	67.9	0.0	336.5	0.0	41.3	695.3	145.6	22.1	0.0
LnGrp LOS	E	A	D	F	A	F	A	D	F	F	C	A
Approach Vol, veh/h		42			2247			658			943	
Approach Delay, s/veh		45.3			200.5			642.6			124.3	
Approach LOS		D			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	24.0	43.9	20.5	0.0	52.0	6.4	58.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	18.0	37.9	18.1	4.0	36.0	4.0	52.0
Max Q Clear Time (g_c+I1), s	26.0	22.0	41.9	4.3	0.0	8.5	2.2	56.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	255.1
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

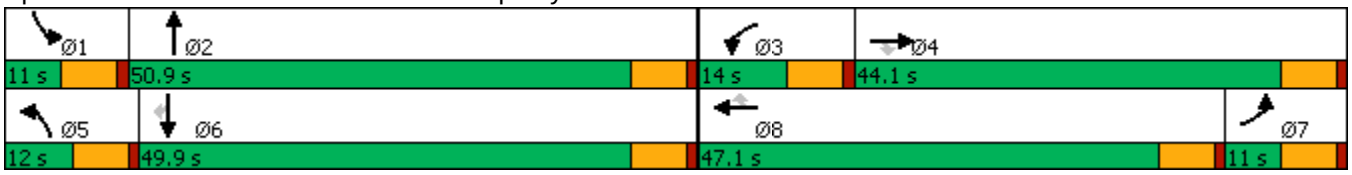


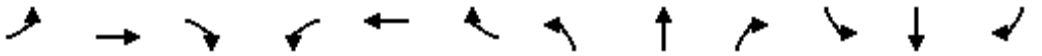
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	728	1150	181	147	1244	316	173	353	269	293	126	461
Future Volume (vph)	728	1150	181	147	1244	316	173	353	269	293	126	461
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.935				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3284	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3284	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			143		189				225
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	791	1250	197	160	1352	343	188	384	292	318	137	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	1250	197	160	1352	343	188	676	0	318	137	501
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	16.0	40.6	40.6	10.1	34.7	34.7	8.1	25.2		7.1	24.2	24.2
Actuated g/C Ratio	0.16	0.41	0.41	0.10	0.35	0.35	0.08	0.25		0.07	0.24	0.24
v/c Ratio	1.55	0.86	0.30	0.96	0.76	0.58	1.42	0.69		1.41	0.30	0.64
Control Delay	288.0	35.7	8.4	108.7	31.9	19.3	262.8	26.9		244.8	31.1	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	288.0	35.7	8.4	108.7	31.9	19.3	262.8	26.9		244.8	31.1	21.2
LOS	F	D	A	F	C	B	F	C		F	C	C
Approach Delay		122.5			36.2			78.2			97.0	
Approach LOS		F			D			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.1			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.55			
Intersection Signal Delay: 84.8		Intersection LOS: F	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Hillman St & Prosperity Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	1150	181	147	1244	316	173	353	269	293	126	461
Future Volume (veh/h)	728	1150	181	147	1244	316	173	353	269	293	126	461
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	791	1250	197	160	1352	343	188	384	292	318	137	501
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	434	1391	555	165	1817	511	132	530	397	224	498	662
Arrive On Green	0.14	0.39	0.39	0.10	0.36	0.36	0.08	0.28	0.26	0.07	0.27	0.27
Sat Flow, veh/h	3183	3554	1419	1641	5106	1435	1641	1917	1438	3183	1870	2487
Grp Volume(v), veh/h	791	1250	197	160	1352	343	188	356	320	318	137	501
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1435	1641	1777	1578	1591	1870	1244
Q Serve(g_s), s	13.5	32.8	9.7	9.7	23.0	14.1	8.0	18.0	18.5	7.0	5.8	11.9
Cycle Q Clear(g_c), s	13.5	32.8	9.7	9.7	23.0	14.1	8.0	18.0	18.5	7.0	5.8	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.91	1.00		1.00
Lane Grp Cap(c), veh/h	434	1391	555	165	1817	511	132	491	436	224	498	662
V/C Ratio(X)	1.82	0.90	0.35	0.97	0.74	0.67	1.42	0.72	0.73	1.42	0.28	0.76
Avail Cap(c_a), veh/h	434	1435	573	165	2216	623	132	839	745	224	864	1150
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	28.4	21.4	44.5	28.0	13.4	45.7	32.5	33.5	46.2	28.9	14.1
Incr Delay (d2), s/veh	379.8	7.8	0.4	60.5	1.1	2.1	228.3	2.0	2.4	212.0	0.3	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.8	13.8	3.0	6.5	8.6	4.1	11.5	7.4	6.9	9.2	2.4	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	422.7	36.2	21.7	105.0	29.1	15.5	274.0	34.6	35.9	258.2	29.1	15.9
LnGrp LOS	F	D	C	F	C	B	F	C	D	F	C	B
Approach Vol, veh/h		2238			1855			864			956	
Approach Delay, s/veh		171.5			33.2			87.2			98.4	
Approach LOS		F			C			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	31.4	14.0	42.9	12.0	30.4	17.5	39.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	8.0	38.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	9.0	20.5	11.7	34.8	10.0	13.9	15.5	25.0
Green Ext Time (p_c), s	0.0	2.6	0.0	2.1	0.0	3.1	0.0	7.4

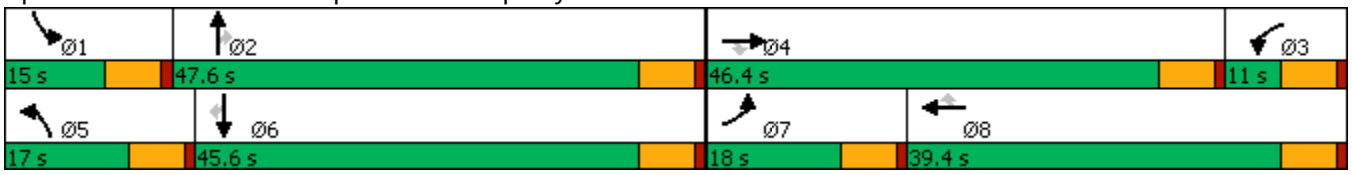
Intersection Summary	
HCM 6th Ctrl Delay	104.0
HCM 6th LOS	F

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1279	455	118	1088	80	220	164	108	126	221	76
Future Volume (vph)	186	1279	455	118	1088	80	220	164	108	126	221	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1406	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			136			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	1390	495	128	1183	87	239	178	117	137	240	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1390	495	128	1183	87	239	178	117	137	240	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	18.0	46.4	46.4	11.0	39.4	39.4	17.0	47.6	47.6	15.0	45.6	45.6
Total Split (%)	15.0%	38.7%	38.7%	9.2%	32.8%	32.8%	14.2%	39.7%	39.7%	12.5%	38.0%	38.0%
Maximum Green (s)	12.0	40.4	40.4	5.0	33.4	33.4	11.0	41.6	41.6	9.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	14.1	42.8	42.8	7.1	35.7	35.7	13.1	24.3	24.3	11.1	22.2	22.2
Actuated g/C Ratio	0.14	0.42	0.42	0.07	0.35	0.35	0.13	0.24	0.24	0.11	0.22	0.22
v/c Ratio	0.89	0.93	0.71	1.13	0.66	0.15	1.13	0.40	0.24	0.77	0.59	0.18
Control Delay	82.5	41.2	23.4	169.0	31.1	1.7	144.9	34.2	1.3	73.7	40.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.5	41.2	23.4	169.0	31.1	1.7	144.9	34.2	1.3	73.7	40.7	0.8
LOS	F	D	C	F	C	A	F	C	A	E	D	A
Approach Delay		41.0			41.9			76.5			43.3	
Approach LOS		D			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101.3			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 45.8		Intersection LOS: D	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Laspina St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	1279	455	118	1088	80	220	164	108	126	221	76
Future Volume (veh/h)	186	1279	455	118	1088	80	220	164	108	126	221	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	202	1390	495	128	1183	87	239	178	117	137	240	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	1522	608	118	1821	506	218	418	315	185	379	290
Arrive On Green	0.14	0.43	0.43	0.07	0.36	0.36	0.13	0.22	0.22	0.11	0.20	0.20
Sat Flow, veh/h	1641	3554	1420	1641	5106	1418	1641	1870	1410	1641	1870	1429
Grp Volume(v), veh/h	202	1390	495	128	1183	87	239	178	117	137	240	83
Grp Sat Flow(s),veh/h/ln	1641	1777	1420	1641	1702	1418	1641	1870	1410	1641	1870	1429
Q Serve(g_s), s	11.7	35.8	16.5	7.0	18.9	4.1	13.0	8.0	5.1	7.9	11.5	4.8
Cycle Q Clear(g_c), s	11.7	35.8	16.5	7.0	18.9	4.1	13.0	8.0	5.1	7.9	11.5	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	1522	608	118	1821	506	218	418	315	185	379	290
V/C Ratio(X)	0.86	0.91	0.81	1.09	0.65	0.17	1.09	0.43	0.37	0.74	0.63	0.29
Avail Cap(c_a), veh/h	235	1544	617	118	1852	514	218	835	630	185	797	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	26.2	7.5	45.3	26.3	21.5	42.3	32.5	18.0	41.9	35.6	32.9
Incr Delay (d2), s/veh	25.7	8.6	8.1	108.6	0.8	0.2	88.2	0.7	0.7	14.7	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	14.9	4.8	6.2	7.0	1.3	10.3	3.4	2.2	3.7	5.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	34.8	15.6	153.9	27.1	21.7	130.5	33.2	18.8	56.6	37.3	33.5
LnGrp LOS	E	C	B	F	C	C	F	C	B	E	D	C
Approach Vol, veh/h		2087			1398			534			460	
Approach Delay, s/veh		33.3			38.4			73.6			42.4	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	25.8	11.0	45.8	17.0	23.8	18.0	38.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	41.6	5.0	40.4	11.0	39.6	12.0	33.4
Max Q Clear Time (g_c+I1), s	9.9	10.0	9.0	37.8	15.0	13.5	13.7	20.9
Green Ext Time (p_c), s	0.0	1.1	0.0	2.0	0.0	1.1	0.0	4.8

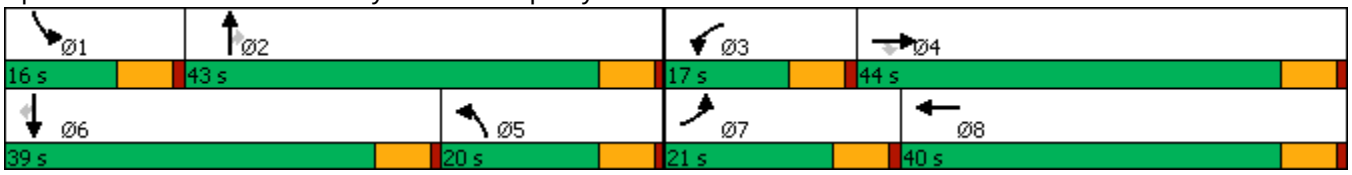
Intersection Summary	
HCM 6th Ctrl Delay	40.6
HCM 6th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1808	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1808	0	1630	3539	1429	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			305		9				136			266
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	640	558	250	535	114	358	958	98	143	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	640	558	250	649	0	358	958	98	143	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	21.0	44.0	44.0	17.0	40.0		20.0	43.0	43.0	16.0	39.0	39.0
Total Split (%)	17.5%	36.7%	36.7%	14.2%	33.3%		16.7%	35.8%	35.8%	13.3%	32.5%	32.5%
Maximum Green (s)	15.0	38.0	38.0	11.0	34.0		14.0	37.0	37.0	10.0	33.0	33.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	17.0	40.0	40.0	13.0	36.0		16.0	39.0	39.0	12.0	35.0	35.0
Actuated g/C Ratio	0.14	0.33	0.33	0.11	0.30		0.13	0.32	0.32	0.10	0.29	0.29
v/c Ratio	1.67	1.03	0.82	1.42	1.18		1.65	0.83	0.18	0.88	1.26	0.68
Control Delay	352.6	83.9	27.4	258.1	137.8		345.5	45.1	2.5	97.9	160.2	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	352.6	83.9	27.4	258.1	137.8		345.5	45.1	2.5	97.9	160.2	18.8
LOS	F	F	C	F	F		F	D	A	F	F	B
Approach Delay		129.2			171.2			118.2			124.1	
Approach LOS		F			F			F			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.67			
Intersection Signal Delay: 131.4		Intersection LOS: F	
Intersection Capacity Utilization 119.7%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	640	558	250	535	114	358	958	98	143	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	623	478	178	447	95	219	1155	466	164	1036	418
Arrive On Green	0.14	0.33	0.33	0.11	0.30	0.28	0.13	0.32	0.32	0.10	0.29	0.29
Sat Flow, veh/h	1641	1870	1434	1641	1489	317	1641	3554	1434	1641	3554	1433
Grp Volume(v), veh/h	384	640	558	250	0	649	358	958	98	143	1297	408
Grp Sat Flow(s),veh/h/ln	1641	1870	1434	1641	0	1806	1641	1777	1434	1641	1777	1433
Q Serve(g_s), s	17.0	40.0	26.0	13.0	0.0	36.0	16.0	29.9	5.9	10.3	35.0	22.3
Cycle Q Clear(g_c), s	17.0	40.0	26.0	13.0	0.0	36.0	16.0	29.9	5.9	10.3	35.0	22.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	623	478	178	0	542	219	1155	466	164	1036	418
V/C Ratio(X)	1.65	1.03	1.17	1.41	0.00	1.20	1.64	0.83	0.21	0.87	1.25	0.98
Avail Cap(c_a), veh/h	232	623	478	178	0	542	219	1155	466	164	1036	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	40.0	16.9	53.5	0.0	42.2	52.0	37.4	29.3	53.2	42.5	18.3
Incr Delay (d2), s/veh	311.9	43.0	95.9	213.0	0.0	105.9	306.2	5.2	0.2	36.5	121.2	37.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	26.8	24.5	20.2	15.6	0.0	30.9	24.9	13.0	2.0	5.7	31.8	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	363.4	83.0	112.8	266.5	0.0	148.1	358.2	42.6	29.6	89.7	163.7	55.9
LnGrp LOS	F	F	F	F	A	F	F	D	C	F	F	E
Approach Vol, veh/h		1582			899			1414			1848	
Approach Delay, s/veh		161.6			181.0			121.6			134.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	43.0	17.0	44.0	20.0	39.0	21.0	40.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	10.0	37.0	11.0	38.0	14.0	33.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	12.3	31.9	15.0	42.0	18.0	37.0	19.0	38.0
Green Ext Time (p_c), s	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	146.0
HCM 6th LOS	F



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	647	180	63	635	120	37
Future Volume (vph)	647	180	63	635	120	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	703	196	68	690	130	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	703	196	68	690	130	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.1%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	14.1

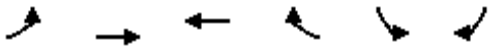
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	647	180	63	635	120	37
Future Vol, veh/h	647	180	63	635	120	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	703	196	68	690	130	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	899	0	1529	703
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	826	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	756	-	~ 129	438
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	756	-	~ 117	438
Mov Cap-2 Maneuver	-	-	-	-	~ 117	-
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	391	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	147.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	117	438	-	-	756	-
HCM Lane V/C Ratio	1.115	0.092	-	-	0.091	-
HCM Control Delay (s)	188.5	14	-	-	10.2	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	7.9	0.3	-	-	0.3	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	123	369	286	39	29	215
Future Volume (vph)	123	369	286	39	29	215
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.984		0.881	
Flt Protected		0.988			0.994	
Satd. Flow (prot)	0	1840	1833	0	1502	0
Flt Permitted		0.988			0.994	
Satd. Flow (perm)	0	1840	1833	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	401	311	42	32	234
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	535	353	0	266	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	369	286	39	29	215
Future Vol, veh/h	123	369	286	39	29	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	401	311	42	32	234

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	353	0	-	0	1001	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	669	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1206	-	-	-	269	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1206	-	-	-	231	710
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	509	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1206	-	-	-	570
HCM Lane V/C Ratio	0.111	-	-	-	0.465
HCM Control Delay (s)	8.4	0	-	-	16.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.5



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	241	1577	94	304	1908
Future Volume (vph)	0	241	1577	94	304	1908
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	262	1714	102	330	2074
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	262	1714	102	330	2074
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

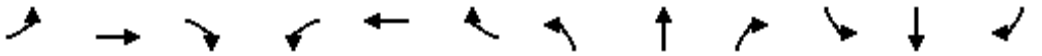
Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	241	1577	94	304	1908
Future Vol, veh/h	0	241	1577	94	304	1908
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None		None		None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	262	1714	102	330	2074

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	857	0	0	1816	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	301	-	-	334	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	301	-	-	334	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	62.2	0	11.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	301	334	-
HCM Lane V/C Ratio	-	-	0.87	0.989	-
HCM Control Delay (s)	-	-	62.2	82.7	-
HCM Lane LOS	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	7.8	10.9	-

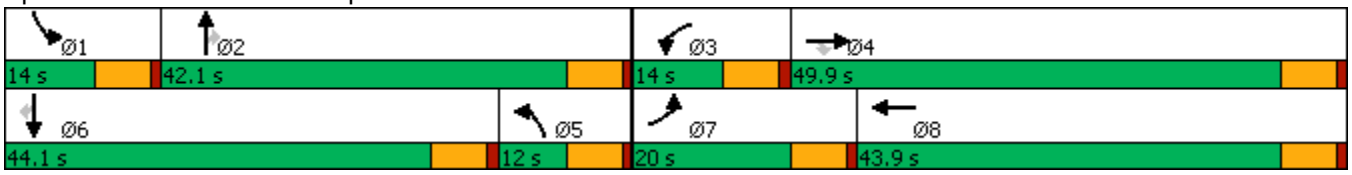


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	1236	315	137	926	115	109	281	76	124	385	93
Future Volume (vph)	196	1236	315	137	926	115	109	281	76	124	385	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3465	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3465	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		12				136			136
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1343	342	149	1007	125	118	305	83	135	418	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1343	342	149	1132	0	118	305	83	135	418	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	49.9	49.9	14.0	43.9		12.0	42.1	42.1	14.0	44.1	44.1
Total Split (%)	16.7%	41.6%	41.6%	11.7%	36.6%		10.0%	35.1%	35.1%	11.7%	36.8%	36.8%
Maximum Green (s)	14.0	43.9	43.9	8.0	37.9		6.0	36.1	36.1	8.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	16.1	46.0	46.0	10.0	40.0		8.0	29.3	29.3	10.0	31.3	31.3
Actuated g/C Ratio	0.14	0.41	0.41	0.09	0.36		0.07	0.26	0.26	0.09	0.28	0.28
v/c Ratio	0.91	0.92	0.49	1.02	0.90		1.01	0.62	0.17	0.92	0.80	0.20
Control Delay	88.2	43.1	13.7	131.7	45.7		139.4	41.9	1.6	109.1	49.1	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.2	43.1	13.7	131.7	45.7		139.4	41.9	1.6	109.1	49.1	2.9
LOS	F	D	B	F	D		F	D	A	F	D	A
Approach Delay		42.9			55.7			58.0			54.4	
Approach LOS		D			E			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 111.5			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 50.2		Intersection LOS: D	
Intersection Capacity Utilization 84.3%		ICU Level of Service E	
Analysis Period (min) 15			

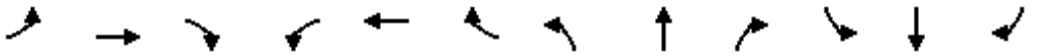
Splits and Phases: 10: Laspina St & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	1236	315	137	926	115	109	281	76	124	385	93
Future Volume (veh/h)	196	1236	315	137	926	115	109	281	76	124	385	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	213	1343	342	149	1007	125	118	305	83	135	418	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	1467	586	150	1134	141	120	481	368	150	515	395
Arrive On Green	0.15	0.41	0.41	0.09	0.36	0.34	0.07	0.26	0.26	0.09	0.28	0.28
Sat Flow, veh/h	1641	3554	1419	1641	3169	393	1641	1870	1432	1641	1870	1432
Grp Volume(v), veh/h	213	1343	342	149	564	568	118	305	83	135	418	101
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1777	1786	1641	1870	1432	1641	1870	1432
Q Serve(g_s), s	13.9	38.9	14.0	9.9	32.6	32.7	7.8	15.8	5.0	8.9	22.7	3.9
Cycle Q Clear(g_c), s	13.9	38.9	14.0	9.9	32.6	32.7	7.8	15.8	5.0	8.9	22.7	3.9
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	1467	586	150	636	639	120	481	368	150	515	395
V/C Ratio(X)	0.89	0.92	0.58	0.99	0.89	0.89	0.98	0.63	0.23	0.90	0.81	0.26
Avail Cap(c_a), veh/h	241	1495	597	150	650	653	120	653	500	150	688	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	30.2	11.7	49.5	33.0	33.2	50.5	36.0	32.0	49.0	36.9	12.8
Incr Delay (d2), s/veh	29.9	9.0	1.4	70.4	13.9	14.0	75.8	1.4	0.3	44.7	5.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	16.7	3.9	6.8	15.2	15.4	5.6	6.9	1.7	5.3	10.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.6	39.2	13.1	119.9	46.9	47.2	126.2	37.4	32.3	93.7	42.3	13.2
LnGrp LOS	E	D	B	F	D	D	F	D	C	F	D	B
Approach Vol, veh/h		1898			1281			506			654	
Approach Delay, s/veh		38.6			55.5			57.2			48.4	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	32.0	14.0	49.0	12.0	34.0	20.0	43.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	36.1	8.0	43.9	6.0	38.1	14.0	37.9
Max Q Clear Time (g_c+I1), s	10.9	17.8	11.9	40.9	9.8	24.7	15.9	34.7
Green Ext Time (p_c), s	0.0	1.3	0.0	2.1	0.0	1.6	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

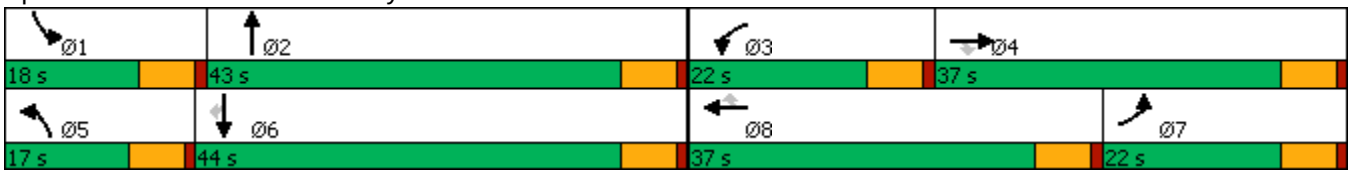


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	872	346	133	667	368	175	869	119	367	901	465
Future Volume (vph)	354	872	346	133	667	368	175	869	119	367	901	465
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3463	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3463	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			262			207		13				372
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	948	376	145	725	400	190	945	129	399	979	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	385	948	376	145	725	400	190	1074	0	399	979	505
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	37.0	37.0	22.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	30.8%	30.8%	18.3%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	31.0	31.0	16.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.3	33.0	33.0	16.1	30.8	30.8	13.0	39.0		14.0	40.0	40.0
Actuated g/C Ratio	0.15	0.28	0.28	0.14	0.26	0.26	0.11	0.33		0.12	0.34	0.34
v/c Ratio	1.52	0.96	0.64	0.66	0.79	0.76	1.06	0.93		2.07	1.55	0.69
Control Delay	290.0	62.6	17.3	62.9	47.5	29.2	135.4	53.0		524.9	286.1	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	290.0	62.6	17.3	62.9	47.5	29.2	135.4	53.0		524.9	286.1	14.5
LOS	F	E	B	E	D	C	F	D		F	F	B
Approach Delay		103.9			43.5			65.4			263.9	
Approach LOS		F			D			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.1			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.07			
Intersection Signal Delay: 132.6		Intersection LOS: F	
Intersection Capacity Utilization 112.1%		ICU Level of Service H	
Analysis Period (min) 15			

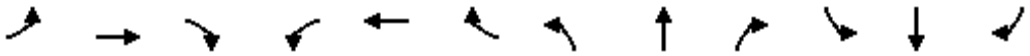
Splits and Phases: 11: Mooney Blvd & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	872	346	133	667	368	175	869	119	367	901	465
Future Volume (veh/h)	354	872	346	133	667	368	175	869	119	367	901	465
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	385	948	376	145	725	400	190	945	129	399	979	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	1027	409	197	905	365	183	1045	143	197	641	491
Arrive On Green	0.15	0.29	0.29	0.12	0.25	0.25	0.11	0.33	0.32	0.12	0.34	0.34
Sat Flow, veh/h	1641	3554	1415	1641	3554	1431	1641	3128	427	1641	1870	1434
Grp Volume(v), veh/h	385	948	376	145	725	400	190	537	537	399	979	505
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1431	1641	1777	1778	1641	1870	1434
Q Serve(g_s), s	18.0	30.2	30.0	10.0	22.3	20.9	13.0	33.6	33.7	14.0	40.0	24.4
Cycle Q Clear(g_c), s	18.0	30.2	30.0	10.0	22.3	20.9	13.0	33.6	33.7	14.0	40.0	24.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	253	1027	409	197	905	365	183	594	594	197	641	491
V/C Ratio(X)	1.52	0.92	0.92	0.74	0.80	1.10	1.04	0.90	0.90	2.03	1.53	1.03
Avail Cap(c_a), veh/h	253	1027	409	253	1005	405	183	594	594	197	641	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	40.2	40.2	49.6	40.7	21.4	51.9	37.1	37.3	51.4	38.4	14.2
Incr Delay (d2), s/veh	254.0	13.3	25.7	8.0	4.3	75.3	77.5	17.3	17.4	480.0	245.3	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.9	14.2	12.7	4.3	9.7	14.0	9.0	16.4	16.5	31.7	60.5	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	303.4	53.5	65.9	57.6	45.0	96.7	129.4	54.4	54.7	531.3	283.7	62.1
LnGrp LOS	F	D	E	E	D	F	F	D	D	F	F	F
Approach Vol, veh/h		1709			1270			1264			1883	
Approach Delay, s/veh		112.5			62.7			65.8			276.7	
Approach LOS		F			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	43.0	18.0	37.7	17.0	44.0	22.0	33.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	16.0	31.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	16.0	35.7	12.0	32.2	15.0	42.0	20.0	24.3
Green Ext Time (p_c), s	0.0	0.7	0.1	0.0	0.0	0.0	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	143.0
HCM 6th LOS	F



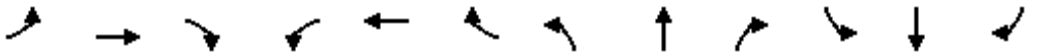
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Future Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.998			0.965			0.901	
Flt Protected		0.995			0.995			0.974			0.999	
Satd. Flow (prot)	0	1816	0	0	1850	0	0	1751	0	0	1677	0
Flt Permitted		0.995			0.995			0.974			0.999	
Satd. Flow (perm)	0	1816	0	0	1850	0	0	1751	0	0	1677	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	124	908	175	97	900	14	108	42	53	3	47	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1207	0	0	1011	0	0	203	0	0	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	46.4
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1207	1011	203	190
Demand Flow Rate, veh/h	1230	1031	207	194
Vehicles Circulating, veh/h	150	279	1055	1127
Vehicles Exiting, veh/h	1171	983	325	183
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	55.9	46.7	16.0	17.2
Approach LOS	F	E	C	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1230	1031	207	194
Cap Entry Lane, veh/h	1184	1038	470	437
Entry HV Adj Factor	0.981	0.981	0.981	0.980
Flow Entry, veh/h	1207	1011	203	190
Cap Entry, veh/h	1162	1018	462	428
V/C Ratio	1.039	0.993	0.440	0.444
Control Delay, s/veh	55.9	46.7	16.0	17.2
LOS	F	E	C	C
95th %tile Queue, veh	24	19	2	2

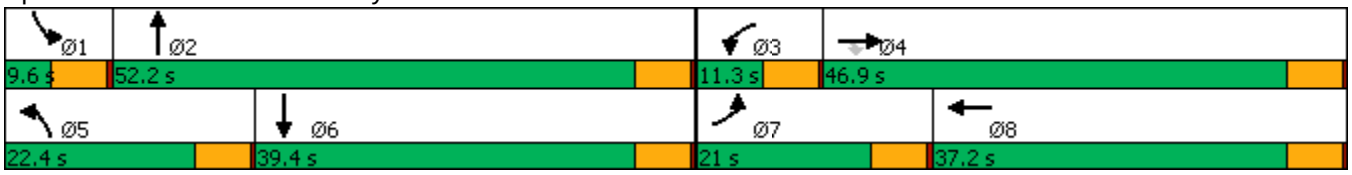


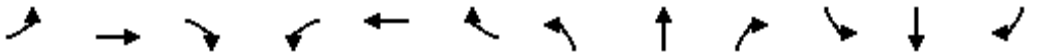
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	5061	0	1630	4939	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	5061	0	1630	4939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227		2			4			32	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	227	35	221	8	164	1262	35	15	1534	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	227	35	229	0	164	1297	0	15	1819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	46.9	46.9	11.3	37.2		22.4	52.2		9.6	39.4	
Total Split (%)	17.5%	39.1%	39.1%	9.4%	31.0%		18.7%	43.5%		8.0%	32.8%	
Maximum Green (s)	15.5	41.4	41.4	5.8	31.7		16.9	46.7		4.1	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	17.1	35.2	35.2	7.3	20.4		15.9	52.0		5.6	35.7	
Actuated g/C Ratio	0.16	0.33	0.33	0.07	0.19		0.15	0.49		0.05	0.34	
v/c Ratio	1.02	0.33	0.36	0.31	0.63		0.67	0.52		0.17	1.07	
Control Delay	107.0	29.6	5.3	57.8	46.9		57.6	20.6		56.4	78.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	107.0	29.6	5.3	57.8	46.9		57.6	20.6		56.4	78.5	
LOS	F	C	A	E	D		E	C		E	E	
Approach Delay		51.5			48.3			24.7			78.3	
Approach LOS		D			D			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 105.2			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 53.7		Intersection LOS: D	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

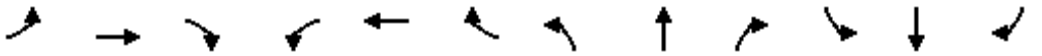




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	227	35	221	8	164	1262	35	15	1534	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	580	444	67	322	12	217	2346	65	47	1533	284
Arrive On Green	0.17	0.31	0.31	0.04	0.18	0.16	0.13	0.46	0.44	0.03	0.36	0.34
Sat Flow, veh/h	1641	1870	1433	1641	1792	65	1641	5103	142	1641	4306	797
Grp Volume(v), veh/h	271	208	227	35	0	229	164	842	455	15	1211	608
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1857	1641	1702	1840	1641	1702	1699
Q Serve(g_s), s	16.3	8.6	12.9	2.1	0.0	11.5	9.6	17.6	17.7	0.9	35.4	35.4
Cycle Q Clear(g_c), s	16.3	8.6	12.9	2.1	0.0	11.5	9.6	17.6	17.7	0.9	35.4	35.4
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.08	1.00		0.47
Lane Grp Cap(c), veh/h	281	580	444	67	0	334	217	1565	846	47	1212	605
V/C Ratio(X)	0.97	0.36	0.51	0.53	0.00	0.69	0.75	0.54	0.54	0.32	1.00	1.00
Avail Cap(c_a), veh/h	281	807	618	120	0	620	304	1650	892	92	1212	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	26.6	28.1	46.8	0.0	38.2	41.6	19.3	19.3	47.3	32.0	32.4
Incr Delay (d2), s/veh	44.3	0.4	0.9	6.3	0.0	2.5	6.7	0.3	0.6	3.8	25.7	37.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	3.6	4.2	0.9	0.0	5.1	4.0	6.2	6.7	0.4	17.3	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.2	27.0	29.0	53.1	0.0	40.7	48.3	19.6	19.9	51.1	57.7	70.2
LnGrp LOS	F	C	C	D	A	D	D	B	B	D	E	F
Approach Vol, veh/h		706			264			1461			1834	
Approach Delay, s/veh		50.0			42.3			22.9			61.8	
Approach LOS		D			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	49.7	8.0	34.8	17.2	39.4	21.0	21.9
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.1	46.7	5.8	41.4	16.9	33.9	15.5	31.7
Max Q Clear Time (g_c+I1), s	2.9	19.7	4.1	14.9	11.6	37.4	18.3	13.5
Green Ext Time (p_c), s	0.0	5.9	0.0	1.6	0.2	0.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	45.3
HCM 6th LOS	D

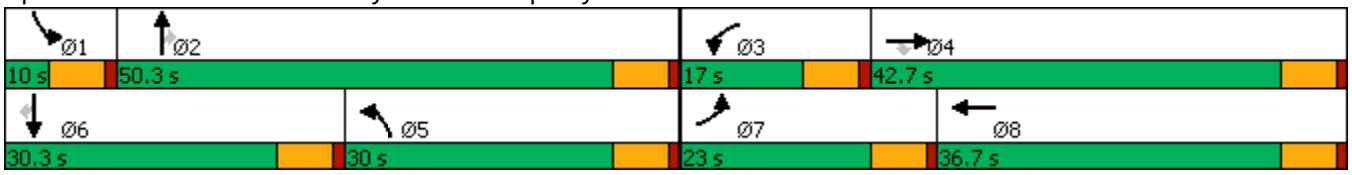


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	3162	3435	0	3162	5085	1458	3162	5085	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1432	3162	3435	0	3162	5085	1429	3162	5085	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			501		21				136			263
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	640	558	250	535	114	358	958	98	143	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	640	558	250	649	0	358	958	98	143	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	17.0	36.7		30.0	50.3	50.3	10.0	30.3	30.3
Total Split (%)	19.2%	35.6%	35.6%	14.2%	30.6%		25.0%	41.9%	41.9%	8.3%	25.3%	25.3%
Maximum Green (s)	17.0	36.7	36.7	11.0	30.7		24.0	44.3	44.3	4.0	24.3	24.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	18.0	31.7	31.7	12.8	26.5		19.4	39.9	39.9	6.1	26.6	26.6
Actuated g/C Ratio	0.17	0.30	0.30	0.12	0.25		0.18	0.37	0.37	0.06	0.25	0.25
v/c Ratio	0.72	0.61	0.72	0.66	0.75		0.62	0.50	0.16	0.80	1.02	0.74
Control Delay	51.8	35.0	10.5	55.8	42.0		46.0	27.3	2.1	82.4	72.3	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	35.0	10.5	55.8	42.0		46.0	27.3	2.1	82.4	72.3	23.4
LOS	D	D	B	E	D		D	C	A	F	E	C
Approach Delay		30.5			45.8			30.3			62.3	
Approach LOS		C			D			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 106.6			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 43.1		Intersection LOS: D	
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	640	558	250	535	114	358	958	98	143	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1017	410	376	703	149	508	1883	529	197	1385	388
Arrive On Green	0.16	0.29	0.29	0.12	0.24	0.22	0.16	0.37	0.37	0.06	0.27	0.27
Sat Flow, veh/h	3183	3554	1433	3183	2905	616	3183	5106	1435	3183	5106	1432
Grp Volume(v), veh/h	384	640	558	250	326	323	358	958	98	143	1297	408
Grp Sat Flow(s),veh/h/ln	1591	1777	1433	1591	1777	1744	1591	1702	1435	1591	1702	1432
Q Serve(g_s), s	11.1	15.2	16.7	7.3	16.5	16.7	10.3	14.1	4.5	4.3	24.1	16.0
Cycle Q Clear(g_c), s	11.1	15.2	16.7	7.3	16.5	16.7	10.3	14.1	4.5	4.3	24.1	16.0
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	517	1017	410	376	430	422	508	1883	529	197	1385	388
V/C Ratio(X)	0.74	0.63	1.36	0.67	0.76	0.76	0.71	0.51	0.19	0.73	0.94	1.05
Avail Cap(c_a), veh/h	624	1418	572	427	599	588	853	2438	685	197	1385	388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	30.1	12.6	40.9	34.1	34.5	38.6	23.8	20.7	44.7	34.5	13.0
Incr Delay (d2), s/veh	3.9	0.6	176.9	3.3	3.6	3.9	1.8	0.2	0.2	12.5	12.1	59.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	6.0	24.5	2.8	7.0	7.0	3.9	5.1	1.4	1.9	10.6	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.6	30.8	189.5	44.2	37.8	38.4	40.4	24.0	20.9	57.2	46.6	72.5
LnGrp LOS	D	C	F	D	D	D	D	C	C	E	D	F
Approach Vol, veh/h		1582			899			1414			1848	
Approach Delay, s/veh		89.6			39.8			27.9			53.2	
Approach LOS		F			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	39.8	15.4	31.8	19.5	30.3	19.7	27.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	44.3	11.0	36.7	24.0	24.3	17.0	30.7
Max Q Clear Time (g_c+I1), s	6.3	16.1	9.3	18.7	12.3	26.1	13.1	18.7
Green Ext Time (p_c), s	0.0	5.0	0.2	5.2	1.1	0.0	0.6	2.0

Intersection Summary	
HCM 6th Ctrl Delay	54.9
HCM 6th LOS	D

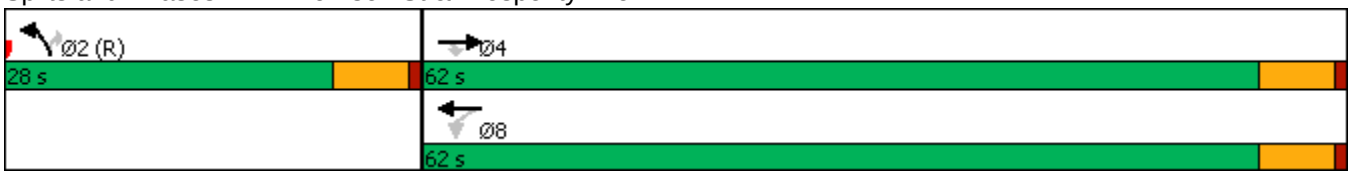
Lanes, Volumes, Timings
7: Morrison St & Prosperity Ave

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	647	180	63	635	120	37
Future Volume (vph)	647	180	63	635	120	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.192		0.950	
Satd. Flow (perm)	1863	1458	329	1863	1630	1458
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		196				40
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	703	196	68	690	130	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	703	196	68	690	130	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	62.0	62.0	62.0	62.0	28.0	28.0
Total Split (%)	68.9%	68.9%	68.9%	68.9%	31.1%	31.1%
Maximum Green (s)	56.0	56.0	56.0	56.0	22.0	22.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	44.6	44.6	44.6	44.6	33.4	33.4
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.37	0.37
v/c Ratio	0.76	0.24	0.42	0.75	0.21	0.07
Control Delay	23.5	1.9	20.4	22.9	23.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	1.9	20.4	22.9	23.9	8.8
LOS	C	A	C	C	C	A
Approach Delay	18.8			22.6	20.4	
Approach LOS	B			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 20.5		Intersection LOS: C	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Morrison St & Prosperity Ave



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	647	180	63	635	120	37
Future Volume (veh/h)	647	180	63	635	120	37
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1723	1723	1870	1723	1723
Adj Flow Rate, veh/h	703	196	68	690	130	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	902	704	177	902	631	561
Arrive On Green	0.48	0.48	0.48	0.48	0.38	0.38
Sat Flow, veh/h	1870	1460	571	1870	1641	1460
Grp Volume(v), veh/h	703	196	68	690	130	40
Grp Sat Flow(s),veh/h/ln	1870	1460	571	1870	1641	1460
Q Serve(g_s), s	28.1	7.2	10.1	27.2	4.8	1.6
Cycle Q Clear(g_c), s	28.1	7.2	38.2	27.2	4.8	1.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	902	704	177	902	631	561
V/C Ratio(X)	0.78	0.28	0.38	0.76	0.21	0.07
Avail Cap(c_a), veh/h	1164	908	257	1164	631	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	13.9	35.2	19.1	18.5	17.5
Incr Delay (d2), s/veh	2.0	0.2	1.4	2.3	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	2.1	1.4	10.4	1.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.4	14.1	36.5	21.4	19.3	17.8
LnGrp LOS	C	B	D	C	B	B
Approach Vol, veh/h	899			758	170	
Approach Delay, s/veh	19.8			22.8	18.9	
Approach LOS	B			C	B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	40.6	49.4	49.4
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	56.0	56.0
Max Q Clear Time (g_c+I1), s	6.8	30.1	40.2
Green Ext Time (p_c), s	0.5	3.8	3.2

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Lanes, Volumes, Timings
9: Mooney Blvd & Seminole Ave



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	241	1577	94	304	1908
Future Volume (vph)	0	241	1577	94	304	1908
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	1	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	1716	1458	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	1716	1458	3539	1458	1630	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		307		91		
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	262	1714	102	330	2074
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	262	1714	102	330	2074
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	10.0	24.0
Total Split (s)	24.0	24.0	45.0	45.0	21.0	66.0

Lanes, Volumes, Timings
9: Mooney Blvd & Seminole Ave

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	26.7%	26.7%	50.0%	50.0%	23.3%	73.3%
Maximum Green (s)	18.0	18.0	39.0	39.0	15.0	60.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	6.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)		8.9	41.0	41.0	28.1	73.1
Actuated g/C Ratio		0.10	0.46	0.46	0.31	0.81
v/c Ratio		0.62	1.06	0.14	0.65	0.72
Control Delay		9.3	67.0	4.5	35.0	6.1
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		9.3	67.0	4.5	35.0	6.1
LOS		A	E	A	D	A
Approach Delay	9.3		63.5			10.1
Approach LOS	A		E			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 31.7		Intersection LOS: C	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Mooney Blvd & Seminole Ave



HCM 6th Signalized Intersection Summary
9: Mooney Blvd & Seminole Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	241	1577	94	304	1908
Future Volume (veh/h)	0	241	1577	94	304	1908
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1723	1723	1870	1723	1723	1870
Adj Flow Rate, veh/h	0	262	1714	102	330	2074
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	318	316	1640	674	310	2469
Arrive On Green	0.00	0.22	0.46	0.46	0.19	0.69
Sat Flow, veh/h	1641	1460	3647	1460	1641	3647
Grp Volume(v), veh/h	0	262	1714	102	330	2074
Grp Sat Flow(s),veh/h/ln	1641	1460	1777	1460	1641	1777
Q Serve(g_s), s	0.0	15.4	41.5	3.6	17.0	38.5
Cycle Q Clear(g_c), s	0.0	15.4	41.5	3.6	17.0	38.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	318	316	1640	674	310	2469
V/C Ratio(X)	0.00	0.83	1.05	0.15	1.06	0.84
Avail Cap(c_a), veh/h	328	324	1640	674	310	2469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.09	0.09	0.31	0.31
Uniform Delay (d), s/veh	0.0	33.7	24.2	14.0	36.5	10.1
Incr Delay (d2), s/veh	0.0	16.0	22.4	0.0	47.4	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.4	19.5	1.0	10.3	9.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	49.7	46.6	14.1	83.9	11.2
LnGrp LOS	A	D	F	B	F	B
Approach Vol, veh/h	262		1816			2404
Approach Delay, s/veh	49.7		44.8			21.2
Approach LOS	D		D			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	21.0	45.5			66.5	23.5
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	15.0	39.0			60.0	18.0
Max Q Clear Time (g_c+I1), s	19.0	43.5			40.5	17.4
Green Ext Time (p_c), s	0.0	0.0			11.6	0.1

Intersection Summary	
HCM 6th Ctrl Delay	32.4
HCM 6th LOS	C

Lanes, Volumes, Timings
12: Morrison St & Tulare Ave

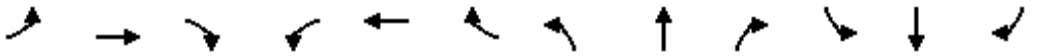
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Future Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997	0.850		0.998			0.965			0.901	
Flt Protected		0.994			0.995			0.974			0.999	
Satd. Flow (prot)	0	1754	1385	0	1850	0	0	1751	0	0	1677	0
Flt Permitted		0.994			0.995			0.974			0.999	
Satd. Flow (perm)	0	1754	1385	0	1850	0	0	1751	0	0	1677	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	124	908	175	97	900	14	108	42	53	3	47	140
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	1050	157	0	1011	0	0	203	0	0	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	137.0%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	29.2
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	2	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1207	1011	203	190
Demand Flow Rate, veh/h	1230	1031	207	194
Vehicles Circulating, veh/h	150	279	1055	1127
Vehicles Exiting, veh/h	1171	983	325	183
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	18.6	46.7	16.0	17.2
Approach LOS	C	E	C	C

Lane	Left	Right	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized					
Lane Util	0.855	0.145	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976	4.976
Entry Flow, veh/h	1052	178	1031	207	194
Cap Entry Lane, veh/h	1239	1239	1038	470	437
Entry HV Adj Factor	0.981	0.983	0.981	0.981	0.980
Flow Entry, veh/h	1032	175	1011	203	190
Cap Entry, veh/h	1215	1218	1018	462	428
V/C Ratio	0.849	0.144	0.993	0.440	0.444
Control Delay, s/veh	21.1	4.2	46.7	16.0	17.2
LOS	C	A	E	C	C
95th %tile Queue, veh	11	1	19	2	2

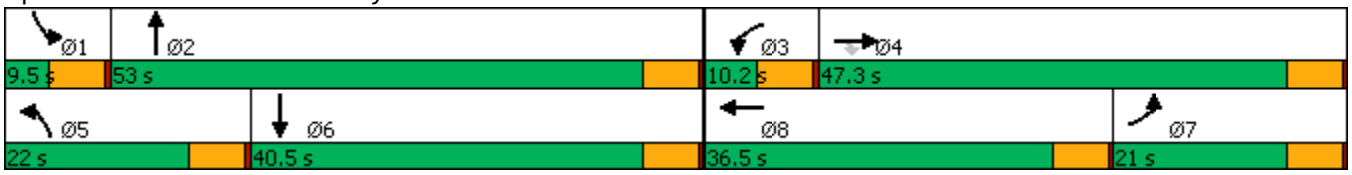


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	154	117	20	104	2	132	659	22	8	395	68
Future Volume (vph)	120	154	117	20	104	2	132	659	22	8	395	68
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.997			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1857	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1857	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			17	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	167	127	22	113	2	143	716	24	9	429	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	167	127	22	115	0	143	740	0	9	503	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	47.3	47.3	10.2	36.5		22.0	53.0		9.5	40.5	
Total Split (%)	17.5%	39.4%	39.4%	8.5%	30.4%		18.3%	44.2%		7.9%	33.8%	
Maximum Green (s)	15.5	41.8	41.8	4.7	31.0		16.5	47.5		4.0	35.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	13.6	24.9	24.9	6.9	14.5		14.1	37.5		6.2	20.1	
Actuated g/C Ratio	0.18	0.33	0.33	0.09	0.19		0.19	0.49		0.08	0.27	
v/c Ratio	0.45	0.27	0.22	0.15	0.32		0.47	0.43		0.07	0.54	
Control Delay	40.1	22.3	2.2	45.5	32.7		40.0	16.2		46.0	27.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.1	22.3	2.2	45.5	32.7		40.0	16.2		46.0	27.8	
LOS	D	C	A	D	C		D	B		D	C	
Approach Delay		21.8			34.7			20.1			28.1	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 75.8			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 52.9%		ICU Level of Service A	
Analysis Period (min) 15			

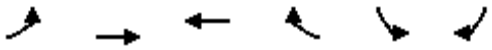
Splits and Phases: 1: Mooney Blvd & Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	154	117	20	104	2	132	659	22	8	395	68
Future Volume (veh/h)	120	154	117	20	104	2	132	659	22	8	395	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	130	167	127	22	113	2	143	716	24	9	429	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	454	348	82	300	5	228	1260	42	63	781	134
Arrive On Green	0.13	0.24	0.24	0.05	0.16	0.13	0.14	0.36	0.33	0.04	0.26	0.23
Sat Flow, veh/h	1641	1870	1431	1641	1831	32	1641	3504	117	1641	3017	516
Grp Volume(v), veh/h	130	167	127	22	0	115	143	363	377	9	251	252
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1864	1641	1777	1845	1641	1777	1756
Q Serve(g_s), s	3.9	3.8	3.8	0.7	0.0	2.8	4.3	8.5	8.5	0.3	6.3	6.5
Cycle Q Clear(g_c), s	3.9	3.8	3.8	0.7	0.0	2.8	4.3	8.5	8.5	0.3	6.3	6.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	212	454	348	82	0	306	228	639	664	63	460	455
V/C Ratio(X)	0.61	0.37	0.37	0.27	0.00	0.38	0.63	0.57	0.57	0.14	0.55	0.55
Avail Cap(c_a), veh/h	539	1564	1197	196	0	1170	570	1682	1746	174	1253	1238
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	16.3	16.3	23.7	0.0	19.3	21.0	13.3	13.4	24.1	16.6	16.8
Incr Delay (d2), s/veh	2.9	0.5	0.6	1.7	0.0	0.8	2.8	0.8	0.8	1.0	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.3	1.0	0.3	0.0	1.0	1.5	2.5	2.6	0.1	2.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	16.8	16.9	25.4	0.0	20.1	23.8	14.1	14.1	25.1	17.6	17.9
LnGrp LOS	C	B	B	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		424			137			883			512	
Approach Delay, s/veh		19.1			20.9			15.7			17.8	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	22.6	6.6	16.6	11.2	17.4	10.7	12.5
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.0	47.5	4.7	41.8	16.5	35.0	15.5	31.0
Max Q Clear Time (g_c+I1), s	2.3	10.5	2.7	5.8	6.3	8.5	5.9	4.8
Green Ext Time (p_c), s	0.0	2.8	0.0	1.1	0.3	1.8	0.2	0.3

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

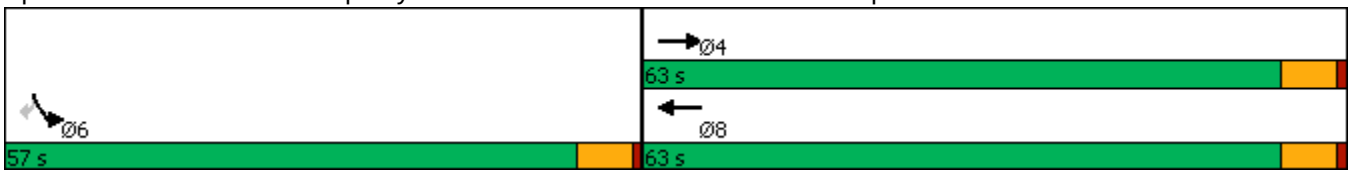


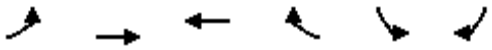
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (vph)	0	306	290	0	85	103
Future Volume (vph)	0	306	290	0	85	103
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						112
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	333	315	0	92	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	333	315	0	92	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		63.0	63.0		57.0	57.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		57.0	57.0		51.0	51.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		10.0	10.0		9.1	9.1
Actuated g/C Ratio		0.37	0.37		0.33	0.33
v/c Ratio		0.26	0.24		0.17	0.20
Control Delay		6.7	6.6		7.5	2.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		6.7	6.6		7.5	2.9
LOS		A	A		A	A
Approach Delay		6.7	6.6		5.0	
Approach LOS		A	A		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 27.2			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.26			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 21.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

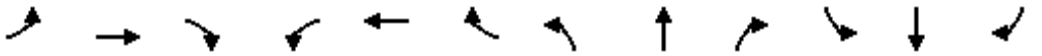




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	306	290	0	85	103
Future Volume (veh/h)	0	306	290	0	85	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	333	315	0	92	112
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1150	1150	0	476	423
Arrive On Green	0.00	0.32	0.32	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	333	315	0	92	112
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.4	1.4	0.0	0.9	1.2
Cycle Q Clear(g_c), s	0.0	1.4	1.4	0.0	0.9	1.2
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1150	1150	0	476	423
V/C Ratio(X)	0.00	0.29	0.27	0.00	0.19	0.26
Avail Cap(c_a), veh/h	0	10130	10130	0	4201	3738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	5.2	0.0	5.5	5.7
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.4	5.3	0.0	5.7	6.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		333	315		204	
Approach Delay, s/veh		5.4	5.3		5.9	
Approach LOS		A	A		A	

Timer - Assigned Phs			4		6	8
Phs Duration (G+Y+Rc), s			10.7		10.0	10.7
Change Period (Y+Rc), s			6.0		6.0	6.0
Max Green Setting (Gmax), s			57.0		51.0	57.0
Max Q Clear Time (g_c+I1), s			3.4		3.2	3.4
Green Ext Time (p_c), s			1.4		0.8	1.3

Intersection Summary						
HCM 6th Ctrl Delay			5.5			
HCM 6th LOS			A			

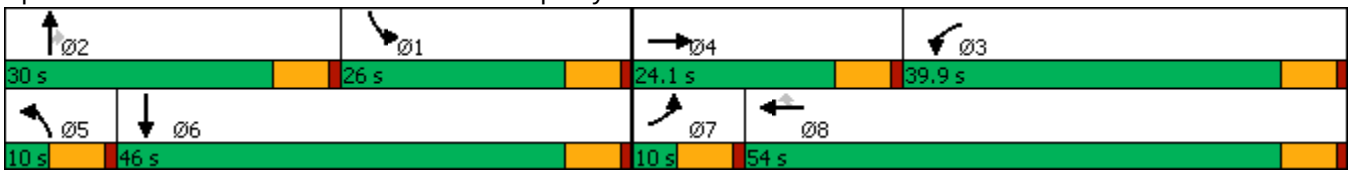


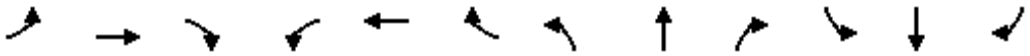
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	7	2	397	9	269	0	33	255	289	106	2
Future Volume (vph)	0	7	2	397	9	269	0	33	255	289	106	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.970				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1798	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.736					0.950		
Satd. Flow (perm)	1716	1798	0	1548	1302	1425	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				292			277		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	8	2	432	10	292	0	36	277	314	115	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	10	0	220	222	292	0	36	277	314	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		39.9	54.0	54.0	10.0	30.0	30.0	26.0	46.0	
Total Split (%)	8.3%	20.1%		33.3%	45.0%	45.0%	8.3%	25.0%	25.0%	21.7%	38.3%	
Maximum Green (s)	4.0	18.1		33.9	48.0	48.0	4.0	24.0	24.0	20.0	40.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		9.9		44.3	44.3	50.9		10.5	10.5	16.2	30.8	
Actuated g/C Ratio		0.11		0.49	0.49	0.57		0.12	0.12	0.18	0.34	
v/c Ratio		0.05		0.29	0.27	0.31		0.17	0.67	0.55	0.18	
Control Delay		33.0		19.9	19.4	2.5		38.2	13.4	37.8	20.7	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		33.0		19.9	19.4	2.5		38.2	13.4	37.8	20.7	
LOS		C		B	B	A		D	B	D	C	
Approach Delay		33.0			12.9			16.3			33.2	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 89.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 41.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave





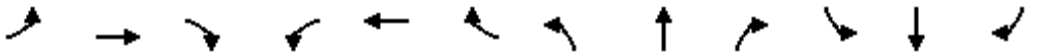
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	7	2	397	9	269	0	33	255	289	106	2
Future Volume (veh/h)	0	7	2	397	9	269	0	33	255	289	106	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	8	2	439	0	292	0	36	277	314	115	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	3	162	41	700	0	559	3	472	368	538	888	15
Arrive On Green	0.00	0.11	0.08	0.21	0.00	0.39	0.00	0.25	0.25	0.17	0.48	0.45
Sat Flow, veh/h	1641	1432	358	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	10	439	0	292	0	36	277	314	0	117
Grp Sat Flow(s),veh/h/ln	1641	0	1790	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.3	7.7	0.0	4.1	0.0	0.9	11.1	5.8	0.0	2.2
Cycle Q Clear(g_c), s	0.0	0.0	0.3	7.7	0.0	4.1	0.0	0.9	11.1	5.8	0.0	2.2
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	3	0	203	700	0	559	3	472	368	538	0	903
V/C Ratio(X)	0.00	0.00	0.05	0.63	0.00	0.52	0.00	0.08	0.75	0.58	0.00	0.13
Avail Cap(c_a), veh/h	155	0	567	1856	0	1130	155	766	598	1103	0	1234
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.3	22.7	0.0	3.1	0.0	18.1	21.9	24.3	0.0	9.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.9	0.0	0.8	0.0	0.1	3.1	1.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	2.6	0.0	2.1	0.0	0.3	3.4	1.9	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	25.4	23.6	0.0	3.8	0.0	18.2	25.0	25.3	0.0	9.1
LnGrp LOS	A	A	C	C	A	A	A	B	C	C	A	A
Approach Vol, veh/h		10			731			313			431	
Approach Delay, s/veh		25.4			15.7			24.2			20.9	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.7	20.0	17.5	11.2	0.0	34.7	0.0	28.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	20.0	24.0	33.9	18.1	4.0	40.0	4.0	48.0
Max Q Clear Time (g_c+I1), s	7.8	13.1	9.7	2.3	0.0	4.2	0.0	6.1
Green Ext Time (p_c), s	1.0	0.9	1.8	0.0	0.0	0.4	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

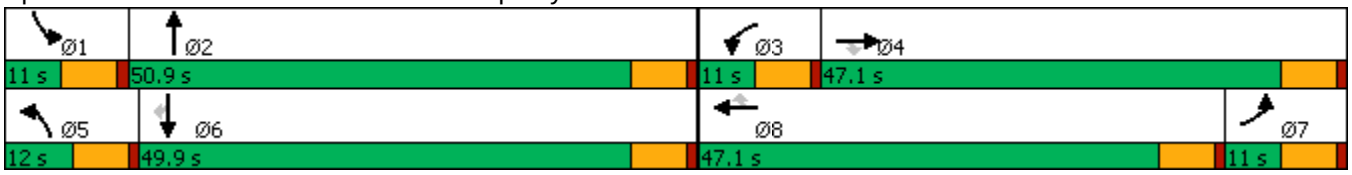


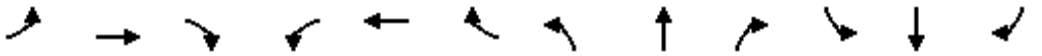
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	248	58	34	374	94	123	261	60	77	31	284
Future Volume (vph)	220	248	58	34	374	94	123	261	60	77	31	284
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3429	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3429	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		27				309
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	270	63	37	407	102	134	284	65	84	34	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	270	63	37	407	102	134	349	0	84	34	309
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	47.1	47.1	11.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	39.3%	39.3%	9.2%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	41.1	41.1	5.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	7.8	24.3	24.3	7.8	15.9	15.9	8.9	19.7		7.8	15.6	15.6
Actuated g/C Ratio	0.12	0.37	0.37	0.12	0.24	0.24	0.13	0.30		0.12	0.24	0.24
v/c Ratio	0.64	0.21	0.10	0.19	0.33	0.23	0.61	0.33		0.23	0.08	0.38
Control Delay	41.3	17.8	0.3	37.9	21.5	3.5	46.3	18.6		35.5	20.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.3	17.8	0.3	37.9	21.5	3.5	46.3	18.6		35.5	20.1	4.2
LOS	D	B	A	D	C	A	D	B		D	C	A
Approach Delay		25.7			19.2			26.3			11.6	
Approach LOS		C			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 66			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 47.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Hillman St & Prosperity Ave

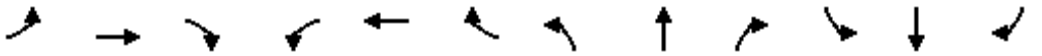




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	248	58	34	374	94	123	261	60	77	31	284
Future Volume (veh/h)	220	248	58	34	374	94	123	261	60	77	31	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	239	270	63	37	407	102	134	284	65	84	34	309
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	410	1014	403	112	1147	321	222	752	169	286	404	536
Arrive On Green	0.13	0.29	0.29	0.07	0.22	0.22	0.14	0.26	0.23	0.09	0.22	0.22
Sat Flow, veh/h	3183	3554	1414	1641	5106	1430	1641	2870	645	3183	1870	2480
Grp Volume(v), veh/h	239	270	63	37	407	102	134	174	175	84	34	309
Grp Sat Flow(s),veh/h/ln	1591	1777	1414	1641	1702	1430	1641	1777	1738	1591	1870	1240
Q Serve(g_s), s	3.8	3.2	1.8	1.2	3.6	1.9	4.2	4.3	4.5	1.3	0.8	3.4
Cycle Q Clear(g_c), s	3.8	3.2	1.8	1.2	3.6	1.9	4.2	4.3	4.5	1.3	0.8	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	410	1014	403	112	1147	321	222	465	455	286	404	536
V/C Ratio(X)	0.58	0.27	0.16	0.33	0.35	0.32	0.60	0.37	0.38	0.29	0.08	0.58
Avail Cap(c_a), veh/h	410	2822	1123	212	4055	1136	242	1535	1502	410	1582	2097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	15.0	14.5	24.1	17.7	6.3	22.1	16.4	16.8	23.1	17.0	5.8
Incr Delay (d2), s/veh	2.1	0.1	0.2	1.7	0.2	0.6	3.6	0.5	0.5	0.6	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.0	0.5	0.4	1.1	0.9	1.5	1.4	1.5	0.4	0.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	15.1	14.7	25.8	17.9	6.9	25.7	16.9	17.3	23.7	17.1	6.8
LnGrp LOS	C	B	B	C	B	A	C	B	B	C	B	A
Approach Vol, veh/h		572			546			483			427	
Approach Delay, s/veh		18.9			16.4			19.5			10.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	18.2	7.7	19.5	11.4	15.7	11.0	16.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	5.0	41.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	3.3	6.5	3.2	5.2	6.2	5.4	5.8	5.6
Green Ext Time (p_c), s	0.0	1.2	0.0	1.3	0.0	1.6	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	16.7
HCM 6th LOS	B

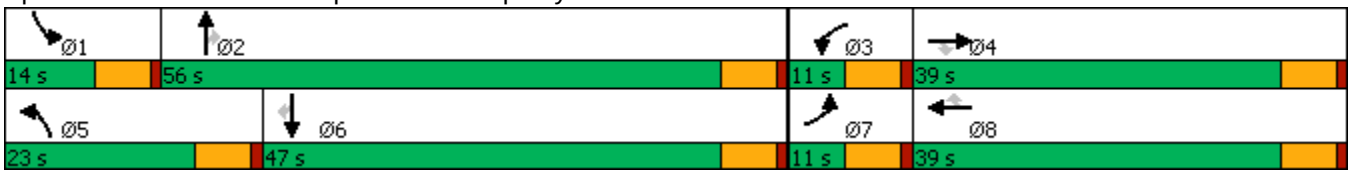


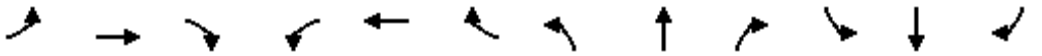
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	217	60	37	269	43	118	173	66	53	162	95
Future Volume (vph)	31	217	60	37	269	43	118	173	66	53	162	95
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1416	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	236	65	40	292	47	128	188	72	58	176	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	236	65	40	292	47	128	188	72	58	176	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	11.0	39.0	39.0	11.0	39.0	39.0	23.0	56.0	56.0	14.0	47.0	47.0
Total Split (%)	9.2%	32.5%	32.5%	9.2%	32.5%	32.5%	19.2%	46.7%	46.7%	11.7%	39.2%	39.2%
Maximum Green (s)	5.0	33.0	33.0	5.0	33.0	33.0	17.0	50.0	50.0	8.0	41.0	41.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	8.8	15.3	15.3	8.8	17.6	17.6	14.4	24.2	24.2	11.1	17.9	17.9
Actuated g/C Ratio	0.14	0.25	0.25	0.14	0.28	0.28	0.23	0.39	0.39	0.18	0.29	0.29
v/c Ratio	0.15	0.27	0.13	0.17	0.20	0.09	0.34	0.26	0.11	0.20	0.33	0.19
Control Delay	38.5	24.7	0.6	38.7	21.7	0.3	31.6	17.6	0.4	35.5	23.2	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	24.7	0.6	38.7	21.7	0.3	31.6	17.6	0.4	35.5	23.2	0.8
LOS	D	C	A	D	C	A	C	B	A	D	C	A
Approach Delay		21.4			20.8			19.1			18.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 62.2			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Laspina St & Prosperity Ave

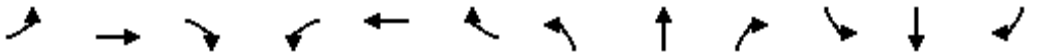




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	217	60	37	269	43	118	173	66	53	162	95
Future Volume (veh/h)	31	217	60	37	269	43	118	173	66	53	162	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	34	236	65	40	292	47	128	188	72	58	176	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	689	273	129	1011	279	233	536	406	147	438	335
Arrive On Green	0.07	0.19	0.19	0.08	0.20	0.20	0.14	0.29	0.29	0.09	0.23	0.23
Sat Flow, veh/h	1641	3554	1407	1641	5106	1407	1641	1870	1415	1641	1870	1431
Grp Volume(v), veh/h	34	236	65	40	292	47	128	188	72	58	176	103
Grp Sat Flow(s),veh/h/ln	1641	1777	1407	1641	1702	1407	1641	1870	1415	1641	1870	1431
Q Serve(g_s), s	0.9	2.6	1.8	1.0	2.2	1.3	3.3	3.6	1.7	1.5	3.6	2.7
Cycle Q Clear(g_c), s	0.9	2.6	1.8	1.0	2.2	1.3	3.3	3.6	1.7	1.5	3.6	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	689	273	129	1011	279	233	536	406	147	438	335
V/C Ratio(X)	0.28	0.34	0.24	0.31	0.29	0.17	0.55	0.35	0.18	0.39	0.40	0.31
Avail Cap(c_a), veh/h	252	2730	1081	252	3922	1081	684	2134	1614	360	1765	1350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	15.9	15.5	19.8	15.5	15.2	18.2	12.9	12.2	19.6	14.7	14.4
Incr Delay (d2), s/veh	1.2	0.3	0.4	1.3	0.2	0.3	2.0	0.4	0.2	1.7	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.8	0.5	0.4	0.6	0.3	1.1	1.1	0.4	0.5	1.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	16.2	16.0	21.2	15.7	15.4	20.2	13.3	12.4	21.3	15.3	14.9
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		335			379			388			337	
Approach Delay, s/veh		16.6			16.2			15.4			16.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	17.1	7.6	12.8	10.5	14.7	7.4	13.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	50.0	5.0	33.0	17.0	41.0	5.0	33.0
Max Q Clear Time (g_c+I1), s	3.5	5.6	3.0	4.6	5.3	5.6	2.9	4.2
Green Ext Time (p_c), s	0.0	0.9	0.0	1.2	0.3	1.0	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

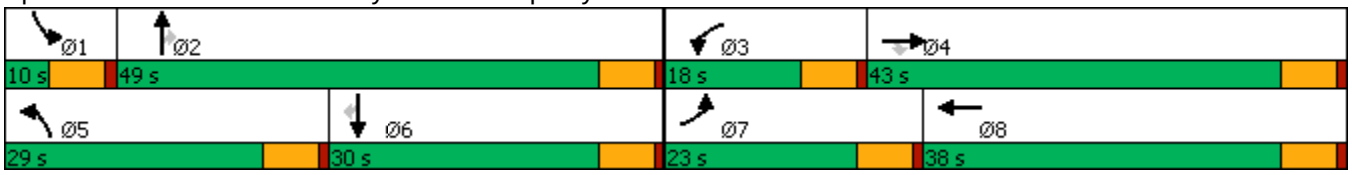


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	162	150	91	112	54	195	628	54	26	389	91
Future Volume (vph)	137	162	150	91	112	54	195	628	54	26	389	91
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1760	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1760	0	1630	3539	1409	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		20				136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	176	163	99	122	59	212	683	59	28	423	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	176	163	99	181	0	212	683	59	28	423	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	43.0	43.0	18.0	38.0		29.0	49.0	49.0	10.0	30.0	30.0
Total Split (%)	19.2%	35.8%	35.8%	15.0%	31.7%		24.2%	40.8%	40.8%	8.3%	25.0%	25.0%
Maximum Green (s)	17.0	37.0	37.0	12.0	32.0		23.0	43.0	43.0	4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	15.2	24.1	24.1	12.2	17.5		18.6	35.9	35.9	6.3	18.4	18.4
Actuated g/C Ratio	0.18	0.28	0.28	0.14	0.20		0.21	0.41	0.41	0.07	0.21	0.21
v/c Ratio	0.52	0.34	0.30	0.43	0.49		0.61	0.47	0.09	0.24	0.56	0.22
Control Delay	43.9	30.6	4.2	46.3	33.5		42.0	22.1	0.3	51.8	35.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	30.6	4.2	46.3	33.5		42.0	22.1	0.3	51.8	35.9	1.1
LOS	D	C	A	D	C		D	C	A	D	D	A
Approach Delay		25.8			38.1			25.2			30.5	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 86.6			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 28.2		Intersection LOS: C	
Intersection Capacity Utilization 56.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	162	150	91	112	54	195	628	54	26	389	91
Future Volume (veh/h)	137	162	150	91	112	54	195	628	54	26	389	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	149	176	163	99	122	59	212	683	59	28	423	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	432	330	176	227	110	311	1231	491	94	759	305
Arrive On Green	0.15	0.23	0.23	0.11	0.19	0.16	0.19	0.35	0.35	0.06	0.21	0.21
Sat Flow, veh/h	1641	1870	1430	1641	1180	571	1641	3554	1417	1641	3554	1429
Grp Volume(v), veh/h	149	176	163	99	0	181	212	683	59	28	423	99
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1751	1641	1777	1417	1641	1777	1429
Q Serve(g_s), s	5.3	4.9	6.1	3.5	0.0	5.8	7.4	9.6	1.8	1.0	6.6	3.6
Cycle Q Clear(g_c), s	5.3	4.9	6.1	3.5	0.0	5.8	7.4	9.6	1.8	1.0	6.6	3.6
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	238	432	330	176	0	337	311	1231	491	94	759	305
V/C Ratio(X)	0.63	0.41	0.49	0.56	0.00	0.54	0.68	0.55	0.12	0.30	0.56	0.32
Avail Cap(c_a), veh/h	504	1179	902	371	0	963	663	2586	1031	159	1494	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	20.2	20.7	26.2	0.0	22.8	23.3	16.4	13.8	28.0	21.7	20.5
Incr Delay (d2), s/veh	2.7	0.6	1.1	2.8	0.0	1.3	2.6	0.4	0.1	1.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.9	1.8	1.3	0.0	2.1	2.6	3.1	0.5	0.4	2.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	20.8	21.8	29.0	0.0	24.1	25.9	16.7	13.9	29.7	22.3	21.2
LnGrp LOS	C	C	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h		488			280			954			550	
Approach Delay, s/veh		23.2			25.9			18.6			22.5	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	25.4	10.6	18.3	15.7	17.2	13.0	15.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	43.0	12.0	37.0	23.0	24.0	17.0	32.0
Max Q Clear Time (g_c+I1), s	3.0	11.6	5.5	8.1	9.4	8.6	7.3	7.8
Green Ext Time (p_c), s	0.0	3.3	0.1	1.2	0.6	1.9	0.3	0.6

Intersection Summary	
HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	229	4	24	230	22	41
Future Volume (vph)	229	4	24	230	22	41
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1859	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1859	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	249	4	26	250	24	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	253	0	0	276	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

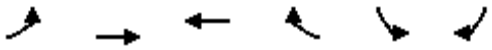
Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	229	4	24	230	22	41
Future Vol, veh/h	229	4	24	230	22	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	249	4	26	250	24	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	253	0	553	251
Stage 1	-	-	-	-	251	-
Stage 2	-	-	-	-	302	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1312	-	494	788
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	750	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1312	-	483	788
Mov Cap-2 Maneuver	-	-	-	-	483	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	733	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	646	-	-	1312	-
HCM Lane V/C Ratio	0.106	-	-	0.02	-
HCM Control Delay (s)	11.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	166	158	29	17	90
Future Volume (vph)	99	166	158	29	17	90
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.886	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1824	0	1508	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1824	0	1508	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	180	172	32	18	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	288	204	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	99	166	158	29	17	90
Future Vol, veh/h	99	166	158	29	17	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	180	172	32	18	98

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	204	0	-	0	584	188
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	396	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1368	-	-	-	474	854
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1368	-	-	-	432	854
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1368	-	-	-	739
HCM Lane V/C Ratio	0.079	-	-	-	0.157
HCM Control Delay (s)	7.9	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	203	775	16	43	562
Future Volume (vph)	0	203	775	16	43	562
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	221	842	17	47	611
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	221	842	17	47	611
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

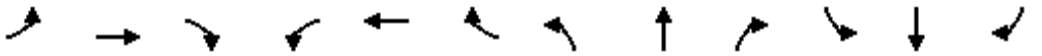
Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	203	775	16	43	562
Future Vol, veh/h	0	203	775	16	43	562
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None		None		None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	221	842	17	47	611

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	421	0	0	859	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	581	-	-	778	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	581	-	-	778	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	581	778	-
HCM Lane V/C Ratio	-	-	0.38	0.06	-
HCM Control Delay (s)	-	-	14.9	9.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.2	-

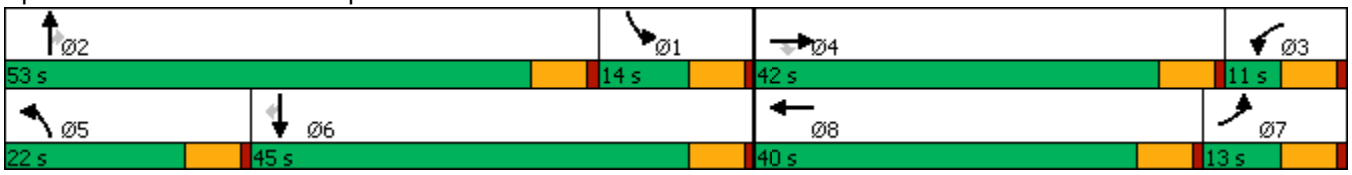


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	361	63	39	547	38	122	216	60	56	182	67
Future Volume (vph)	47	361	63	39	547	38	122	216	60	56	182	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3496	0	1630	1863	1432	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				136			136
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	392	68	42	595	41	133	235	65	61	198	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	392	68	42	636	0	133	235	65	61	198	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	13.0	42.0	42.0	11.0	40.0		22.0	53.0	53.0	14.0	45.0	45.0
Total Split (%)	10.8%	35.0%	35.0%	9.2%	33.3%		18.3%	44.2%	44.2%	11.7%	37.5%	37.5%
Maximum Green (s)	7.0	36.0	36.0	5.0	34.0		16.0	47.0	47.0	8.0	39.0	39.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	10.2	20.8	20.8	12.7	24.0		15.2	20.3	20.3	13.9	19.7	19.7
Actuated g/C Ratio	0.14	0.28	0.28	0.17	0.33		0.21	0.28	0.28	0.19	0.27	0.27
v/c Ratio	0.23	0.39	0.13	0.15	0.56		0.40	0.46	0.13	0.20	0.40	0.15
Control Delay	43.2	29.2	0.5	36.0	26.7		38.4	30.2	0.6	35.1	29.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	29.2	0.5	36.0	26.7		38.4	30.2	0.6	35.1	29.2	0.7
LOS	D	C	A	D	C		D	C	A	D	C	A
Approach Delay		26.8			27.2			28.3			24.0	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 73.7			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

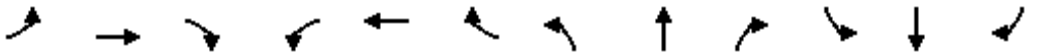
Splits and Phases: 10: Laspina St & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	361	63	39	547	38	122	216	60	56	182	67
Future Volume (veh/h)	47	361	63	39	547	38	122	216	60	56	182	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	51	392	68	42	595	41	133	235	65	61	198	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	787	312	219	942	65	225	438	335	204	414	317
Arrive On Green	0.07	0.22	0.22	0.13	0.28	0.24	0.14	0.23	0.23	0.12	0.22	0.22
Sat Flow, veh/h	1641	3554	1410	1641	3365	231	1641	1870	1430	1641	1870	1430
Grp Volume(v), veh/h	51	392	68	42	314	322	133	235	65	61	198	73
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1819	1641	1870	1430	1641	1870	1430
Q Serve(g_s), s	1.7	5.4	1.2	1.3	8.6	8.7	4.3	6.1	2.0	1.9	5.2	1.5
Cycle Q Clear(g_c), s	1.7	5.4	1.2	1.3	8.6	8.7	4.3	6.1	2.0	1.9	5.2	1.5
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	787	312	219	498	509	225	438	335	204	414	317
V/C Ratio(X)	0.41	0.50	0.22	0.19	0.63	0.63	0.59	0.54	0.19	0.30	0.48	0.23
Avail Cap(c_a), veh/h	264	2416	959	219	1145	1172	528	1640	1254	294	1372	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	19.0	5.3	21.5	17.6	17.7	22.6	18.7	17.2	22.2	18.9	7.0
Incr Delay (d2), s/veh	2.2	0.5	0.3	0.4	1.3	1.3	2.5	1.0	0.3	0.8	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.8	0.6	0.4	2.9	3.0	1.5	2.2	0.6	0.7	1.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	19.5	5.7	22.0	18.9	19.0	25.1	19.8	17.4	23.0	19.8	7.4
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	B	A
Approach Vol, veh/h		511			678			433			332	
Approach Delay, s/veh		18.4			19.2			21.0			17.7	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	17.1	11.5	16.4	11.7	16.4	8.2	19.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	47.0	5.0	36.0	16.0	39.0	7.0	34.0
Max Q Clear Time (g_c+I1), s	3.9	8.1	3.3	7.4	6.3	7.2	3.7	10.7
Green Ext Time (p_c), s	0.0	1.1	0.0	1.9	0.2	0.9	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

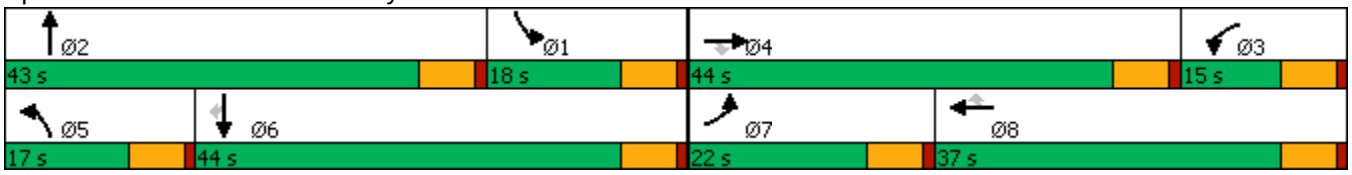


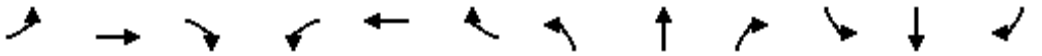
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	308	77	67	388	189	129	527	59	136	290	138
Future Volume (vph)	184	308	77	67	388	189	129	527	59	136	290	138
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			205		10				191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	335	84	73	422	205	140	573	64	148	315	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	335	84	73	422	205	140	637	0	148	315	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	44.0	44.0	15.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	36.7%	36.7%	12.5%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	38.0	38.0	9.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	17.1	23.0	23.0	17.2	19.9	19.9	12.9	24.6		14.0	25.7	25.7
Actuated g/C Ratio	0.19	0.25	0.25	0.19	0.22	0.22	0.14	0.27		0.15	0.28	0.28
v/c Ratio	0.66	0.38	0.17	0.24	0.55	0.44	0.61	0.68		0.60	0.61	0.28
Control Delay	49.7	33.3	0.7	37.7	35.7	7.8	54.0	34.5		51.2	35.1	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.7	33.3	0.7	37.7	35.7	7.8	54.0	34.5		51.2	35.1	3.0
LOS	D	C	A	D	D	A	D	C		D	D	A
Approach Delay		34.2			27.7			38.1			31.2	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 92.1			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 32.9		Intersection LOS: C	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Mooney Blvd & Tulare Ave

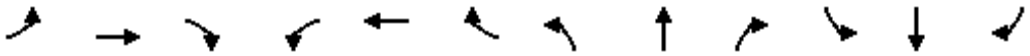




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	308	77	67	388	189	129	527	59	136	290	138
Future Volume (veh/h)	184	308	77	67	388	189	129	527	59	136	290	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	200	335	84	73	422	205	140	573	64	148	315	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	668	264	325	769	310	213	856	95	222	509	390
Arrive On Green	0.17	0.19	0.19	0.20	0.22	0.22	0.13	0.27	0.24	0.14	0.27	0.27
Sat Flow, veh/h	1641	3554	1406	1641	3554	1430	1641	3211	358	1641	1870	1432
Grp Volume(v), veh/h	200	335	84	73	422	205	140	316	321	148	315	150
Grp Sat Flow(s),veh/h/ln	1641	1777	1406	1641	1777	1430	1641	1777	1791	1641	1870	1432
Q Serve(g_s), s	8.7	6.4	2.5	2.8	8.0	6.2	6.1	12.0	12.1	6.5	11.1	6.4
Cycle Q Clear(g_c), s	8.7	6.4	2.5	2.8	8.0	6.2	6.1	12.0	12.1	6.5	11.1	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	279	668	264	325	769	310	213	474	478	222	509	390
V/C Ratio(X)	0.72	0.50	0.32	0.22	0.55	0.66	0.66	0.67	0.67	0.67	0.62	0.38
Avail Cap(c_a), veh/h	391	1881	744	325	1552	624	282	917	925	304	990	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	27.5	11.0	25.4	26.3	10.6	31.3	24.7	24.9	31.1	24.1	22.3
Incr Delay (d2), s/veh	3.7	0.6	0.7	0.3	0.6	2.4	3.4	1.6	1.6	3.4	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.5	1.2	1.0	3.0	3.0	2.4	4.6	4.7	2.5	4.4	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	28.1	11.7	25.8	26.9	13.0	34.7	26.4	26.6	34.5	25.3	23.0
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		619			700			777			613	
Approach Delay, s/veh		27.6			22.7			28.0			26.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	24.2	19.0	18.2	13.8	24.6	16.8	20.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	9.0	38.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	8.5	14.1	4.8	8.4	8.1	13.1	10.7	10.0
Green Ext Time (p_c), s	0.1	2.3	0.1	1.7	0.1	1.7	0.3	2.5

Intersection Summary	
HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	431	61	25	465	0	76	42	80	0	15	9
Future Volume (vph)	18	431	61	25	465	0	76	42	80	0	15	9
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850					0.902			0.948	
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1630	1863	1458	1630	1863	0	1630	1680	0	0	1766	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1630	1863	1458	1630	1863	0	1630	1680	0	0	1766	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	468	66	27	505	0	83	46	87	0	16	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	468	66	27	505	0	83	133	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	431	61	25	465	0	76	42	80	0	15	9
Future Vol, veh/h	18	431	61	25	465	0	76	42	80	0	15	9
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	305	-	425	300	-	-	125	-	-	-	-	-
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	20	468	66	27	505	0	83	46	87	0	16	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	505	0	0	534	0	0	1080	1067	468	1167	1133	505
Stage 1	-	-	-	-	-	-	508	508	-	559	559	-
Stage 2	-	-	-	-	-	-	572	559	-	608	574	-
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	1060	-	-	1034	-	-	196	222	595	171	203	567
Stage 1	-	-	-	-	-	-	547	539	-	513	511	-
Stage 2	-	-	-	-	-	-	505	511	-	483	503	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1060	-	-	1034	-	-	174	212	595	118	194	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	174	212	-	118	194	-
Stage 1	-	-	-	-	-	-	537	529	-	503	498	-
Stage 2	-	-	-	-	-	-	468	498	-	370	493	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	29.1	20.5
HCM LOS			D	C

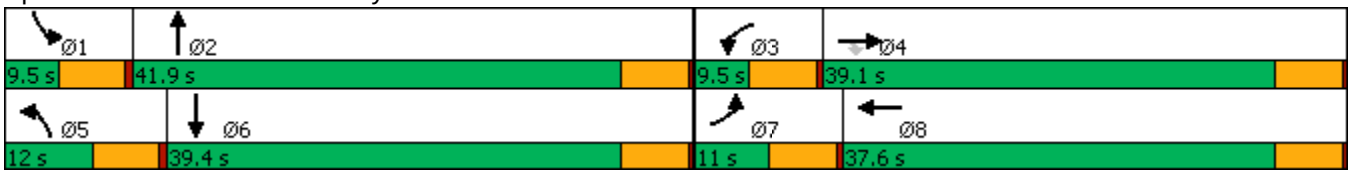
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	174	367	1060	-	-	1034	-	-	258
HCM Lane V/C Ratio	0.475	0.361	0.018	-	-	0.026	-	-	0.101
HCM Control Delay (s)	43.1	20.3	8.5	-	-	8.6	-	-	20.5
HCM Lane LOS	E	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.3	1.6	0.1	-	-	0.1	-	-	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	154	119	20	104	2	136	682	22	8	408	68
Future Volume (vph)	120	154	119	20	104	2	136	682	22	8	408	68
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.997			0.995			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1857	0	1630	3518	0	1630	3450	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1857	0	1630	3518	0	1630	3450	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147		1			4			21	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	167	129	22	113	2	148	741	24	9	443	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	167	129	22	115	0	148	765	0	9	517	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	11.0	39.1	39.1	9.5	37.6		12.0	41.9		9.5	39.4	
Total Split (%)	11.0%	39.1%	39.1%	9.5%	37.6%		12.0%	41.9%		9.5%	39.4%	
Maximum Green (s)	5.5	33.6	33.6	4.0	32.1		6.5	36.4		4.0	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	8.1	20.9	20.9	6.0	13.3		8.8	29.4		6.0	17.4	
Actuated g/C Ratio	0.13	0.34	0.34	0.10	0.22		0.14	0.48		0.10	0.28	
v/c Ratio	0.61	0.26	0.22	0.14	0.29		0.64	0.45		0.06	0.52	
Control Delay	46.5	17.5	4.0	36.2	23.5		46.3	14.3		35.6	20.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	46.5	17.5	4.0	36.2	23.5		46.3	14.3		35.6	20.5	
LOS	D	B	A	D	C		D	B		D	C	
Approach Delay		22.3			25.5			19.5			20.8	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 61.4			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

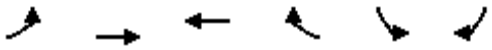
Splits and Phases: 1: Mooney Blvd & Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	154	119	20	104	2	136	682	22	8	408	68
Future Volume (veh/h)	120	154	119	20	104	2	136	682	22	8	408	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	130	167	129	22	113	2	148	741	24	9	443	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	448	343	82	301	5	227	1273	41	63	797	132
Arrive On Green	0.13	0.24	0.24	0.05	0.16	0.14	0.14	0.36	0.33	0.04	0.26	0.23
Sat Flow, veh/h	1641	1870	1431	1641	1831	32	1641	3509	114	1641	3033	503
Grp Volume(v), veh/h	130	167	129	22	0	115	148	375	390	9	258	259
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1864	1641	1777	1846	1641	1777	1759
Q Serve(g_s), s	3.9	3.9	3.9	0.7	0.0	2.8	4.4	8.8	8.8	0.3	6.5	6.6
Cycle Q Clear(g_c), s	3.9	3.9	3.9	0.7	0.0	2.8	4.4	8.8	8.8	0.3	6.5	6.6
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	206	448	343	82	0	306	227	645	670	63	467	462
V/C Ratio(X)	0.63	0.37	0.38	0.27	0.00	0.38	0.65	0.58	0.58	0.14	0.55	0.56
Avail Cap(c_a), veh/h	222	1270	971	174	0	1211	254	1302	1353	174	1216	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	16.4	16.4	23.7	0.0	19.3	21.1	13.3	13.4	24.0	16.4	16.7
Incr Delay (d2), s/veh	5.1	0.5	0.7	1.7	0.0	0.8	5.0	0.8	0.8	1.0	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.3	1.0	0.3	0.0	1.0	1.7	2.6	2.7	0.1	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	16.9	17.1	25.4	0.0	20.0	26.1	14.1	14.2	25.1	17.5	17.7
LnGrp LOS	C	B	B	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		426			137			913			526	
Approach Delay, s/veh		19.9			20.9			16.1			17.7	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	22.8	6.6	16.4	11.2	17.6	10.5	12.5
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.0	36.4	4.0	33.6	6.5	33.9	5.5	32.1
Max Q Clear Time (g_c+I1), s	2.3	10.8	2.7	5.9	6.4	8.6	5.9	4.8
Green Ext Time (p_c), s	0.0	2.8	0.0	1.0	0.0	1.8	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

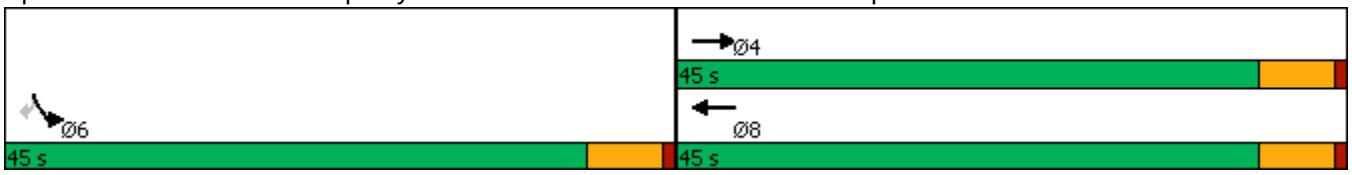


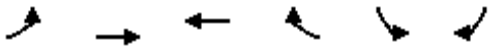
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	312	340	0	99	103
Future Volume (vph)	0	312	340	0	99	103
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						112
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	339	370	0	108	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	339	370	0	108	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		10.3	10.3		9.4	9.4
Actuated g/C Ratio		0.37	0.37		0.34	0.34
v/c Ratio		0.26	0.28		0.20	0.20
Control Delay		6.8	6.9		7.8	3.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		6.8	6.9		7.8	3.0
LOS		A	A		A	A
Approach Delay		6.8	6.9		5.3	
Approach LOS		A	A		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 27.8			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 23.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

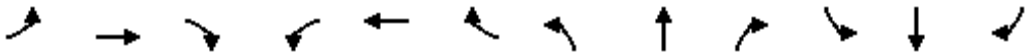




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	312	340	0	99	103
Future Volume (veh/h)	0	312	340	0	99	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	339	370	0	108	112
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1188	1188	0	470	418
Arrive On Green	0.00	0.33	0.33	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	339	370	0	108	112
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.5	1.6	0.0	1.1	1.3
Cycle Q Clear(g_c), s	0.0	1.5	1.6	0.0	1.1	1.3
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1188	1188	0	470	418
V/C Ratio(X)	0.00	0.29	0.31	0.00	0.23	0.27
Avail Cap(c_a), veh/h	0	6901	6901	0	3186	2835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	5.2	0.0	5.8	5.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.3	5.4	0.0	6.0	6.2
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		339	370		220	
Approach Delay, s/veh		5.3	5.4		6.1	
Approach LOS		A	A		A	

Timer - Assigned Phs	4	6	8
Phs Duration (G+Y+Rc), s	11.1	10.1	11.1
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s	3.5	3.3	3.6
Green Ext Time (p_c), s	1.4	0.8	1.5

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

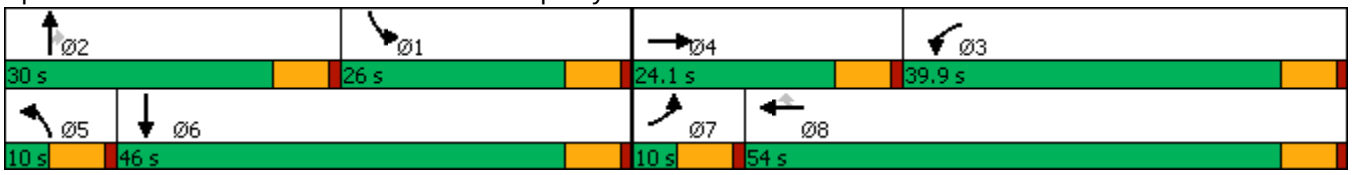


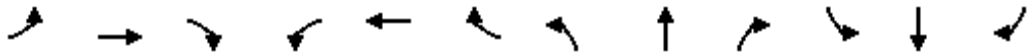
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	7	2	420	9	310	0	33	267	304	106	2
Future Volume (vph)	0	7	2	420	9	310	0	33	267	304	106	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.970				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1798	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.728					0.950		
Satd. Flow (perm)	1716	1798	0	1548	1288	1425	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				337			290		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	8	2	457	10	337	0	36	290	330	115	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	10	0	233	234	337	0	36	290	330	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		39.9	54.0	54.0	10.0	30.0	30.0	26.0	46.0	
Total Split (%)	8.3%	20.1%		33.3%	45.0%	45.0%	8.3%	25.0%	25.0%	21.7%	38.3%	
Maximum Green (s)	4.0	18.1		33.9	48.0	48.0	4.0	24.0	24.0	20.0	40.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		9.9		44.6	44.6	51.2		10.6	10.6	16.6	31.3	
Actuated g/C Ratio		0.11		0.49	0.49	0.57		0.12	0.12	0.18	0.35	
v/c Ratio		0.05		0.31	0.28	0.35		0.16	0.68	0.57	0.18	
Control Delay		33.7		20.3	19.7	2.6		38.5	13.5	38.4	20.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		33.7		20.3	19.7	2.6		38.5	13.5	38.4	20.8	
LOS		C		C	B	A		D	B	D	C	
Approach Delay		33.7			12.7			16.3			33.8	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 90.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave





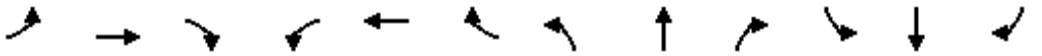
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	7	2	420	9	310	0	33	267	304	106	2
Future Volume (veh/h)	0	7	2	420	9	310	0	33	267	304	106	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	8	2	464	0	337	0	36	290	330	115	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	157	39	717	0	558	2	483	377	546	898	16
Arrive On Green	0.00	0.11	0.08	0.22	0.00	0.39	0.00	0.26	0.26	0.17	0.49	0.46
Sat Flow, veh/h	1641	1432	358	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	10	464	0	337	0	36	290	330	0	117
Grp Sat Flow(s),veh/h/ln	1641	0	1790	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.3	8.5	0.0	5.2	0.0	1.0	12.2	6.3	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	0.3	8.5	0.0	5.2	0.0	1.0	12.2	6.3	0.0	2.3
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	196	717	0	558	2	483	377	546	0	914
V/C Ratio(X)	0.00	0.00	0.05	0.65	0.00	0.60	0.00	0.07	0.77	0.60	0.00	0.13
Avail Cap(c_a), veh/h	149	0	544	1782	0	1086	149	736	574	1060	0	1185
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	26.5	23.5	0.0	3.4	0.0	18.5	22.7	25.3	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.0	0.0	1.1	0.0	0.1	3.5	1.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	2.9	0.0	2.7	0.0	0.4	3.8	2.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	26.6	24.5	0.0	4.5	0.0	18.6	26.2	26.4	0.0	9.2
LnGrp LOS	A	A	C	C	A	A	A	B	C	C	A	A
Approach Vol, veh/h		10			801			326			447	
Approach Delay, s/veh		26.6			16.1			25.3			21.9	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	21.1	18.4	11.3	0.0	36.4	0.0	29.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	20.0	24.0	33.9	18.1	4.0	40.0	4.0	48.0
Max Q Clear Time (g_c+I1), s	9.3	14.2	10.5	2.3	0.0	4.3	0.0	7.2
Green Ext Time (p_c), s	1.0	0.9	1.9	0.0	0.0	0.4	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	19.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

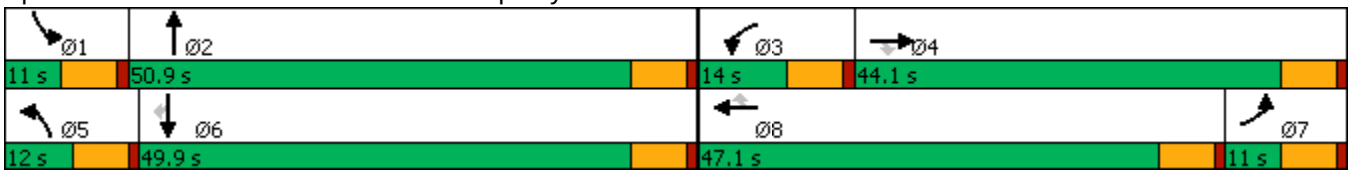


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	286	58	60	461	106	123	261	99	83	31	284
Future Volume (vph)	220	286	58	60	461	106	123	261	99	83	31	284
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3378	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3378	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		54				309
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	311	63	65	501	115	134	284	108	90	34	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	311	63	65	501	115	134	392	0	90	34	309
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	8.6	22.4	22.4	10.1	17.4	17.4	8.8	20.4		7.7	16.2	16.2
Actuated g/C Ratio	0.13	0.33	0.33	0.15	0.25	0.25	0.13	0.30		0.11	0.24	0.24
v/c Ratio	0.60	0.27	0.11	0.27	0.39	0.25	0.64	0.38		0.25	0.08	0.38
Control Delay	40.4	21.3	0.4	36.9	22.3	4.7	50.0	18.5		37.2	21.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	40.4	21.3	0.4	36.9	22.3	4.7	50.0	18.5		37.2	21.0	4.2
LOS	D	C	A	D	C	A	D	B		D	C	A
Approach Delay		26.6			20.7			26.5			12.4	
Approach LOS		C			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 68.6			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

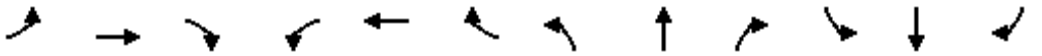
Splits and Phases: 4: Hillman St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	286	58	60	461	106	123	261	99	83	31	284
Future Volume (veh/h)	220	286	58	60	461	106	123	261	99	83	31	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	239	311	63	65	501	115	134	284	108	90	34	309
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	1011	402	136	1239	347	220	653	242	284	401	531
Arrive On Green	0.12	0.28	0.28	0.08	0.24	0.24	0.13	0.26	0.22	0.09	0.21	0.21
Sat Flow, veh/h	3183	3554	1414	1641	5106	1431	1641	2522	934	3183	1870	2480
Grp Volume(v), veh/h	239	311	63	65	501	115	134	198	194	90	34	309
Grp Sat Flow(s),veh/h/ln	1591	1777	1414	1641	1702	1431	1641	1777	1679	1591	1870	1240
Q Serve(g_s), s	4.0	3.9	1.9	2.1	4.6	2.2	4.3	5.2	5.5	1.5	0.8	3.6
Cycle Q Clear(g_c), s	4.0	3.9	1.9	2.1	4.6	2.2	4.3	5.2	5.5	1.5	0.8	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.56	1.00		1.00
Lane Grp Cap(c), veh/h	396	1011	402	136	1239	347	220	460	435	284	401	531
V/C Ratio(X)	0.60	0.31	0.16	0.48	0.40	0.33	0.61	0.43	0.45	0.32	0.08	0.58
Avail Cap(c_a), veh/h	396	2533	1008	292	3912	1096	233	1481	1400	396	1526	2024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	15.8	15.1	24.6	17.9	6.3	23.0	17.4	18.0	24.0	17.7	6.5
Incr Delay (d2), s/veh	2.6	0.2	0.2	2.6	0.2	0.6	4.1	0.6	0.7	0.6	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.2	0.5	0.8	1.5	1.0	1.6	1.8	1.8	0.5	0.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	16.0	15.3	27.2	18.1	6.9	27.1	18.0	18.7	24.6	17.8	7.5
LnGrp LOS	C	B	B	C	B	A	C	B	B	C	B	A
Approach Vol, veh/h		613			681			526			433	
Approach Delay, s/veh		19.8			17.1			20.6			11.8	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	18.6	8.7	20.0	11.6	16.0	11.0	17.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	8.0	38.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	3.5	7.5	4.1	5.9	6.3	5.6	6.0	6.6
Green Ext Time (p_c), s	0.0	1.4	0.0	1.5	0.0	1.6	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

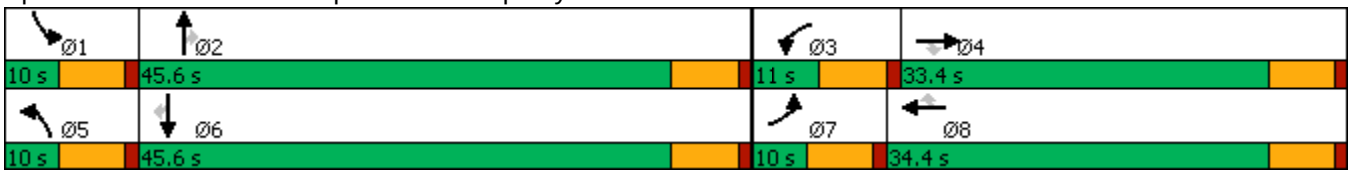


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	300	60	37	398	43	118	173	66	53	162	95
Future Volume (vph)	31	300	60	37	398	43	118	173	66	53	162	95
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	5085	1413	1630	1863	1418	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	326	65	40	433	47	128	188	72	58	176	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	326	65	40	433	47	128	188	72	58	176	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	10.0	33.4	33.4	11.0	34.4	34.4	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (%)	10.0%	33.4%	33.4%	11.0%	34.4%	34.4%	10.0%	45.6%	45.6%	10.0%	45.6%	45.6%
Maximum Green (s)	4.0	27.4	27.4	5.0	28.4	28.4	4.0	39.6	39.6	4.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	6.9	14.7	14.7	8.0	15.0	15.0	6.9	22.1	22.1	6.9	16.3	16.3
Actuated g/C Ratio	0.13	0.27	0.27	0.15	0.27	0.27	0.13	0.40	0.40	0.13	0.30	0.30
v/c Ratio	0.17	0.34	0.13	0.17	0.31	0.09	0.63	0.25	0.11	0.28	0.32	0.19
Control Delay	33.8	19.6	0.6	32.4	18.2	0.4	46.8	16.1	0.3	35.5	17.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	19.6	0.6	32.4	18.2	0.4	46.8	16.1	0.3	35.5	17.7	1.4
LOS	C	B	A	C	B	A	D	B	A	D	B	A
Approach Delay		17.8			17.7			23.3			15.8	
Approach LOS		B			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 54.9			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 46.2%		ICU Level of Service A	
Analysis Period (min) 15			

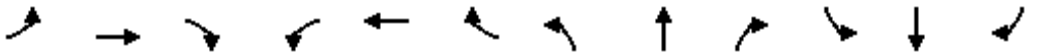
Splits and Phases: 5: Laspina St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	300	60	37	398	43	118	173	66	53	162	95
Future Volume (veh/h)	31	300	60	37	398	43	118	173	66	53	162	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	34	326	65	40	433	47	128	188	72	58	176	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	793	315	127	1160	321	210	507	383	144	432	331
Arrive On Green	0.07	0.22	0.22	0.08	0.23	0.23	0.13	0.27	0.27	0.09	0.23	0.23
Sat Flow, veh/h	1641	3554	1410	1641	5106	1410	1641	1870	1414	1641	1870	1430
Grp Volume(v), veh/h	34	326	65	40	433	47	128	188	72	58	176	103
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1702	1410	1641	1870	1414	1641	1870	1430
Q Serve(g_s), s	0.9	3.7	1.8	1.1	3.4	1.3	3.5	3.8	1.8	1.6	3.8	2.8
Cycle Q Clear(g_c), s	0.9	3.7	1.8	1.1	3.4	1.3	3.5	3.8	1.8	1.6	3.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	120	793	315	127	1160	321	210	507	383	144	432	331
V/C Ratio(X)	0.28	0.41	0.21	0.32	0.37	0.15	0.61	0.37	0.19	0.40	0.41	0.31
Avail Cap(c_a), veh/h	210	2225	883	245	3305	913	210	1657	1252	210	1657	1267
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	15.6	14.9	20.5	15.3	14.5	19.4	13.9	13.1	20.3	15.3	15.0
Incr Delay (d2), s/veh	1.3	0.3	0.3	1.4	0.2	0.2	5.1	0.5	0.2	1.8	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.1	0.4	0.4	1.0	0.3	1.3	1.2	0.4	0.5	1.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	15.9	15.2	21.9	15.5	14.7	24.5	14.3	13.4	22.1	15.9	15.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		425			520			388			337	
Approach Delay, s/veh		16.3			15.9			17.5			16.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	16.7	7.6	14.5	10.0	14.9	7.4	14.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	39.6	5.0	27.4	4.0	39.6	4.0	28.4
Max Q Clear Time (g_c+I1), s	3.6	5.8	3.1	5.7	5.5	5.8	2.9	5.4
Green Ext Time (p_c), s	0.0	0.9	0.0	1.5	0.0	1.0	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

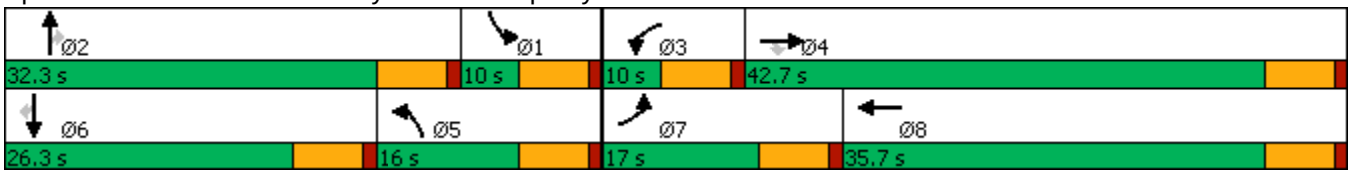


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	247	150	102	245	81	195	628	63	41	389	91
Future Volume (vph)	137	247	150	102	245	81	195	628	63	41	389	91
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.963				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1786	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1434	1630	1786	0	1630	3539	1431	1630	3539	1428
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		19				241			241
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	268	163	111	266	88	212	683	68	45	423	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	268	163	111	354	0	212	683	68	45	423	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	17.0	42.7	42.7	10.0	35.7		16.0	32.3	32.3	10.0	26.3	26.3
Total Split (%)	17.9%	44.9%	44.9%	10.5%	37.6%		16.8%	34.0%	34.0%	10.5%	27.7%	27.7%
Maximum Green (s)	11.0	36.7	36.7	4.0	29.7		10.0	26.3	26.3	4.0	20.3	20.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	12.4	28.8	28.8	6.1	22.4		12.6	28.1	28.1	6.1	17.0	17.0
Actuated g/C Ratio	0.15	0.36	0.36	0.08	0.28		0.16	0.35	0.35	0.08	0.21	0.21
v/c Ratio	0.60	0.40	0.26	0.90	0.69		0.84	0.55	0.10	0.37	0.57	0.20
Control Delay	45.7	21.6	3.9	102.4	32.8		64.9	25.7	0.3	48.6	32.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	21.6	3.9	102.4	32.8		64.9	25.7	0.3	48.6	32.8	0.9
LOS	D	C	A	F	C		E	C	A	D	C	A
Approach Delay		22.8			49.4			32.5			28.5	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 80.7			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	247	150	102	245	81	195	628	63	41	389	91
Future Volume (veh/h)	137	247	150	102	245	81	195	628	63	41	389	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	149	268	163	111	266	88	212	683	68	45	423	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	602	461	139	359	119	278	983	396	149	706	284
Arrive On Green	0.14	0.32	0.32	0.08	0.27	0.24	0.17	0.28	0.28	0.09	0.20	0.20
Sat Flow, veh/h	1641	1870	1434	1641	1338	443	1641	3554	1432	1641	3554	1428
Grp Volume(v), veh/h	149	268	163	111	0	354	212	683	68	45	423	99
Grp Sat Flow(s),veh/h/ln	1641	1870	1434	1641	0	1780	1641	1777	1432	1641	1777	1428
Q Serve(g_s), s	6.1	8.0	3.1	4.7	0.0	12.9	8.7	12.2	1.7	1.8	7.7	2.6
Cycle Q Clear(g_c), s	6.1	8.0	3.1	4.7	0.0	12.9	8.7	12.2	1.7	1.8	7.7	2.6
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	602	461	139	0	478	278	983	396	149	706	284
V/C Ratio(X)	0.66	0.45	0.35	0.80	0.00	0.74	0.76	0.69	0.17	0.30	0.60	0.35
Avail Cap(c_a), veh/h	301	1021	783	139	0	796	278	1418	572	149	1118	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	19.0	4.6	31.9	0.0	23.9	28.1	23.0	8.2	30.1	25.8	9.3
Incr Delay (d2), s/veh	3.2	0.5	0.5	27.2	0.0	2.3	11.8	0.9	0.2	1.1	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.0	1.6	2.7	0.0	4.9	3.9	4.4	0.7	0.7	2.9	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	19.5	5.1	59.1	0.0	26.2	39.9	23.9	8.4	31.2	26.7	10.0
LnGrp LOS	C	B	A	E	A	C	D	C	A	C	C	B
Approach Vol, veh/h		580			465			963			567	
Approach Delay, s/veh		18.7			34.0			26.3			24.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	23.6	10.0	26.8	16.0	18.1	13.8	23.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.5	26.3	4.0	36.7	10.0	20.3	11.0	29.7
Max Q Clear Time (g_c+I1), s	3.8	14.2	6.7	10.0	10.7	9.7	8.1	14.9
Green Ext Time (p_c), s	0.0	2.6	0.0	1.6	0.0	1.6	0.1	1.1

Intersection Summary	
HCM 6th Ctrl Delay	25.5
HCM 6th LOS	C



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	285	56	24	334	88	41
Future Volume (vph)	285	56	24	334	88	41
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	310	61	26	363	96	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	61	26	363	96	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

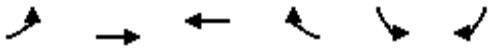
Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	285	56	24	334	88	41
Future Vol, veh/h	285	56	24	334	88	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	310	61	26	363	96	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	371	0	725	310
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	415	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1188	-	392	730
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1188	-	383	730
Mov Cap-2 Maneuver	-	-	-	-	383	-
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	730	-	-	1188	-
HCM Lane V/C Ratio	0.25	0.061	-	-	0.022	-
HCM Control Delay (s)	17.5	10.3	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.2	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	174	162	29	17	90
Future Volume (vph)	99	174	162	29	17	90
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.886	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1824	0	1508	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1824	0	1508	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	189	176	32	18	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	297	208	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	99	174	162	29	17	90
Future Vol, veh/h	99	174	162	29	17	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	189	176	32	18	98

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	208	0	-	0	597	192
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	405	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1363	-	-	-	466	850
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1363	-	-	-	425	850
Mov Cap-2 Maneuver	-	-	-	-	425	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	673	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1363	-	-	-	733
HCM Lane V/C Ratio	0.079	-	-	-	0.159
HCM Control Delay (s)	7.9	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	212	781	16	54	563
Future Volume (vph)	1	212	781	16	54	563
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	230	849	17	59	612
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	230	849	17	59	612
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

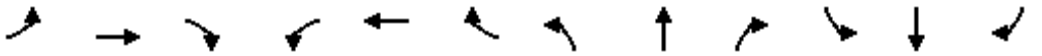
Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	212	781	16	54	563
Future Vol, veh/h	1	212	781	16	54	563
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	230	849	17	59	612

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1273	425	0	0	866	0
Stage 1	849	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	159	578	-	-	773	-
Stage 1	380	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	147	578	-	-	773	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	578	773	-
HCM Lane V/C Ratio	-	-	0.399	0.076	-
HCM Control Delay (s)	-	-	15.3	10	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	1.9	0.2	-

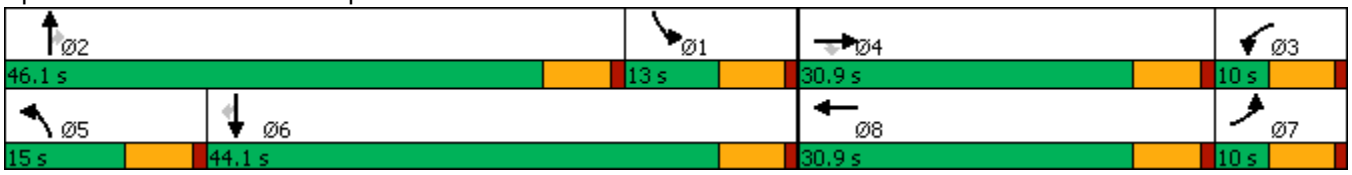


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	382	63	45	572	48	122	216	61	59	182	67
Future Volume (vph)	47	382	63	45	572	48	122	216	61	59	182	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3488	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1410	1630	3488	0	1630	1863	1433	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229		8				164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	415	68	49	622	52	133	235	66	64	198	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	415	68	49	674	0	133	235	66	64	198	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	10.0	30.9	30.9	10.0	30.9		15.0	46.1	46.1	13.0	44.1	44.1
Total Split (%)	10.0%	30.9%	30.9%	10.0%	30.9%		15.0%	46.1%	46.1%	13.0%	44.1%	44.1%
Maximum Green (s)	4.0	24.9	24.9	4.0	24.9		9.0	40.1	40.1	7.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	6.5	18.3	18.3	8.7	20.5		11.4	25.8	25.8	10.3	17.9	17.9
Actuated g/C Ratio	0.10	0.27	0.27	0.13	0.30		0.17	0.38	0.38	0.15	0.26	0.26
v/c Ratio	0.33	0.44	0.12	0.24	0.64		0.49	0.33	0.10	0.26	0.40	0.15
Control Delay	43.0	25.1	0.5	36.8	25.6		39.8	21.8	0.3	34.2	24.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	25.1	0.5	36.8	25.6		39.8	21.8	0.3	34.2	24.2	0.6
LOS	D	C	A	D	C		D	C	A	C	C	A
Approach Delay		23.7			26.4			24.0			21.0	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 67.9			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

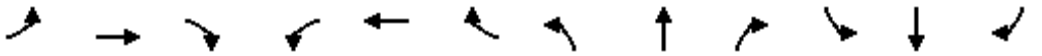
Splits and Phases: 10: Laspina St & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	382	63	45	572	48	122	216	61	59	182	67
Future Volume (veh/h)	47	382	63	45	572	48	122	216	61	59	182	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	51	415	68	49	622	52	133	235	66	64	198	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	798	317	224	948	79	221	436	334	200	413	315
Arrive On Green	0.07	0.22	0.22	0.14	0.29	0.25	0.13	0.23	0.23	0.12	0.22	0.22
Sat Flow, veh/h	1641	3554	1410	1641	3310	276	1641	1870	1430	1641	1870	1430
Grp Volume(v), veh/h	51	415	68	49	333	341	133	235	66	64	198	73
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1810	1641	1870	1430	1641	1870	1430
Q Serve(g_s), s	1.7	5.8	1.2	1.5	9.3	9.4	4.3	6.2	2.1	2.0	5.2	1.5
Cycle Q Clear(g_c), s	1.7	5.8	1.2	1.5	9.3	9.4	4.3	6.2	2.1	2.0	5.2	1.5
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	798	317	224	509	518	221	436	334	200	413	315
V/C Ratio(X)	0.42	0.52	0.21	0.22	0.66	0.66	0.60	0.54	0.20	0.32	0.48	0.23
Avail Cap(c_a), veh/h	175	1695	673	224	848	863	320	1397	1068	262	1330	1017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	19.2	5.4	21.7	17.7	17.8	23.0	19.0	17.4	22.6	19.2	7.2
Incr Delay (d2), s/veh	2.3	0.5	0.3	0.5	1.4	1.4	2.6	1.0	0.3	0.9	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.0	0.6	0.5	3.1	3.2	1.5	2.3	0.6	0.7	1.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	19.7	5.8	22.2	19.1	19.3	25.6	20.0	17.7	23.5	20.0	7.6
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	C	A
Approach Vol, veh/h		534			723			434			335	
Approach Delay, s/veh		18.7			19.4			21.4			18.0	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	17.2	11.7	16.7	11.6	16.4	8.2	20.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	7.0	40.1	4.0	24.9	9.0	38.1	4.0	24.9
Max Q Clear Time (g_c+I1), s	4.0	8.2	3.5	7.8	6.3	7.2	3.7	11.4
Green Ext Time (p_c), s	0.0	1.0	0.0	1.8	0.1	0.9	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

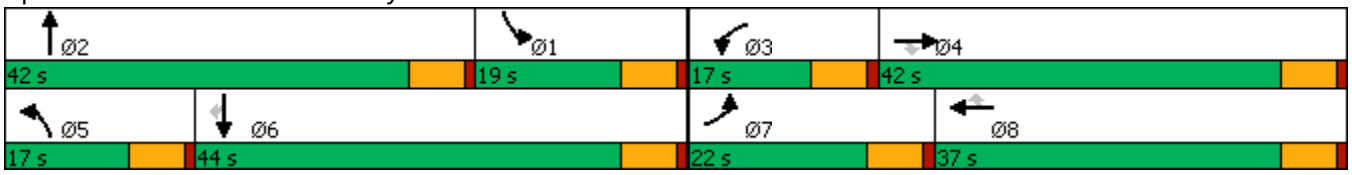


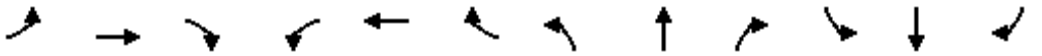
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	333	77	81	429	195	129	527	64	138	290	138
Future Volume (vph)	184	333	77	81	429	195	129	527	64	138	290	138
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			212		11				150
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	362	84	88	466	212	140	573	70	150	315	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	362	84	88	466	212	140	643	0	150	315	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	42.0	42.0	17.0	37.0	37.0	17.0	42.0		19.0	44.0	44.0
Total Split (%)	18.3%	35.0%	35.0%	14.2%	30.8%	30.8%	14.2%	35.0%		15.8%	36.7%	36.7%
Maximum Green (s)	16.0	36.0	36.0	11.0	31.0	31.0	11.0	36.0		13.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	17.2	29.9	29.9	11.6	21.1	21.1	12.9	25.1		14.4	26.6	26.6
Actuated g/C Ratio	0.18	0.32	0.32	0.12	0.22	0.22	0.14	0.27		0.15	0.28	0.28
v/c Ratio	0.67	0.32	0.15	0.44	0.59	0.44	0.63	0.69		0.60	0.60	0.29
Control Delay	51.5	27.8	0.5	50.0	36.7	7.6	56.0	35.4		52.0	35.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	51.5	27.8	0.5	50.0	36.7	7.6	56.0	35.4		52.0	35.2	6.2
LOS	D	C	A	D	D	A	E	D		D	D	A
Approach Delay		31.6			30.2			39.1			32.2	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 94.2			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 33.4		Intersection LOS: C	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Mooney Blvd & Tulare Ave

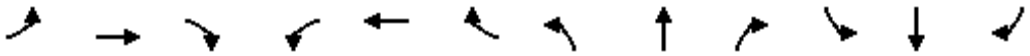




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	333	77	81	429	195	129	527	64	138	290	138
Future Volume (veh/h)	184	333	77	81	429	195	129	527	64	138	290	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	200	362	84	88	466	212	140	573	70	150	315	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	1073	427	151	802	323	211	843	103	223	510	391
Arrive On Green	0.17	0.30	0.30	0.09	0.23	0.23	0.13	0.27	0.24	0.14	0.27	0.27
Sat Flow, veh/h	1641	3554	1415	1641	3554	1430	1641	3175	387	1641	1870	1432
Grp Volume(v), veh/h	200	362	84	88	466	212	140	320	323	150	315	150
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1430	1641	1777	1785	1641	1870	1432
Q Serve(g_s), s	9.0	6.2	3.4	4.0	9.1	6.6	6.4	12.6	12.7	6.8	11.5	6.6
Cycle Q Clear(g_c), s	9.0	6.2	3.4	4.0	9.1	6.6	6.4	12.6	12.7	6.8	11.5	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	276	1073	427	151	802	323	211	472	474	223	510	391
V/C Ratio(X)	0.72	0.34	0.20	0.58	0.58	0.66	0.66	0.68	0.68	0.67	0.62	0.38
Avail Cap(c_a), veh/h	378	1728	688	273	1501	604	273	864	868	315	957	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	21.2	20.2	34.0	27.0	10.8	32.4	25.7	25.9	32.1	24.8	23.1
Incr Delay (d2), s/veh	4.3	0.2	0.2	3.5	0.7	2.3	3.9	1.7	1.7	3.5	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	2.3	1.0	1.6	3.5	3.1	2.5	4.9	5.0	2.7	4.6	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	21.4	20.5	37.5	27.6	13.1	36.3	27.4	27.7	35.6	26.1	23.7
LnGrp LOS	D	C	C	D	C	B	D	C	C	D	C	C
Approach Vol, veh/h		646			766			783			615	
Approach Delay, s/veh		25.5			24.7			29.1			27.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	24.8	11.2	27.6	14.0	25.3	17.1	21.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	36.0	11.0	36.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	8.8	14.7	6.0	8.2	8.4	13.5	11.0	11.1
Green Ext Time (p_c), s	0.2	2.3	0.1	1.8	0.1	1.7	0.3	2.7

Intersection Summary	
HCM 6th Ctrl Delay	26.8
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	431	61	25	465	2	76	43	80	2	18	70
Future Volume (vph)	51	431	61	25	465	2	76	43	80	2	18	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.903			0.895	
Flt Protected	0.950			0.950			0.950				0.999	
Satd. Flow (prot)	1630	1863	1458	1630	1861	0	1630	1682	0	0	1665	0
Flt Permitted	0.950			0.950			0.950				0.999	
Satd. Flow (perm)	1630	1863	1458	1630	1861	0	1630	1682	0	0	1665	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	468	66	27	505	2	83	47	87	2	20	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	468	66	27	507	0	83	134	0	0	98	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

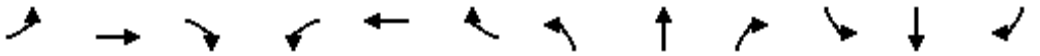
Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	431	61	25	465	2	76	43	80	2	18	70
Future Vol, veh/h	51	431	61	25	465	2	76	43	80	2	18	70
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	305	-	425	300	-	-	125	-	-	-	-	-
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	468	66	27	505	2	83	47	87	2	20	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	507	0	0	534	0	0	1186	1139	468	1238	1204	506
Stage 1	-	-	-	-	-	-	578	578	-	560	560	-
Stage 2	-	-	-	-	-	-	608	561	-	678	644	-
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	1058	-	-	1034	-	-	166	201	595	152	184	566
Stage 1	-	-	-	-	-	-	501	501	-	513	511	-
Stage 2	-	-	-	-	-	-	483	510	-	442	468	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1058	-	-	1034	-	-	124	186	595	99	170	566
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	186	-	99	170	-
Stage 1	-	-	-	-	-	-	475	475	-	486	498	-
Stage 2	-	-	-	-	-	-	391	497	-	323	444	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.4	44	18.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	124	336	1058	-	-	1034	-	-	360
HCM Lane V/C Ratio	0.666	0.398	0.052	-	-	0.026	-	-	0.272
HCM Control Delay (s)	78.7	22.6	8.6	-	-	8.6	-	-	18.7
HCM Lane LOS	F	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.6	1.8	0.2	-	-	0.1	-	-	1.1

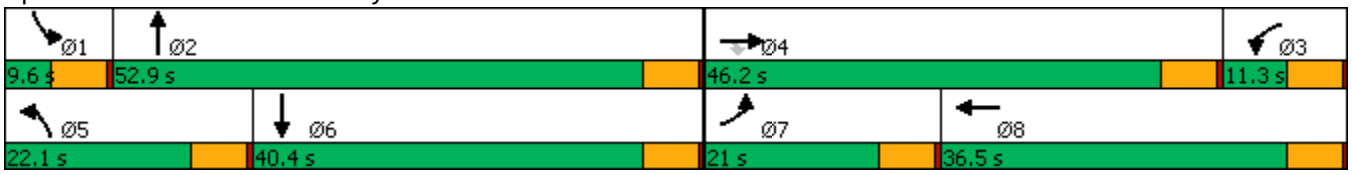


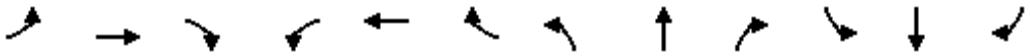
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216		1			3			17	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	216	37	192	3	245	1221	40	15	732	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	216	37	195	0	245	1261	0	15	858	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	46.2	46.2	11.3	36.5		22.1	52.9		9.6	40.4	
Total Split (%)	17.5%	38.5%	38.5%	9.4%	30.4%		18.4%	44.1%		8.0%	33.7%	
Maximum Green (s)	15.5	40.7	40.7	5.8	31.0		16.6	47.4		4.1	34.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	17.2	30.7	30.7	10.4	18.8		18.3	49.7		5.7	30.7	
Actuated g/C Ratio	0.17	0.30	0.30	0.10	0.19		0.18	0.49		0.06	0.30	
v/c Ratio	0.80	0.51	0.37	0.22	0.57		0.83	0.73		0.16	0.81	
Control Delay	65.2	36.1	6.5	47.7	44.4		66.5	25.5		55.5	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.2	36.1	6.5	47.7	44.4		66.5	25.5		55.5	39.5	
LOS	E	D	A	D	D		E	C		E	D	
Approach Delay		36.2			44.9			32.2			39.8	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101.3			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 35.9		Intersection LOS: D	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

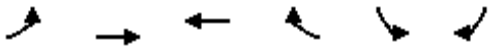




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	216	37	192	3	245	1221	40	15	732	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	412	315	192	308	5	300	1602	52	50	917	158
Arrive On Green	0.17	0.22	0.22	0.12	0.17	0.15	0.18	0.46	0.44	0.03	0.30	0.29
Sat Flow, veh/h	1641	1870	1430	1641	1836	29	1641	3508	115	1641	3015	519
Grp Volume(v), veh/h	222	285	216	37	0	195	245	618	643	15	431	427
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1864	1641	1777	1846	1641	1777	1757
Q Serve(g_s), s	11.8	12.8	7.7	1.9	0.0	8.8	13.1	26.4	26.4	0.8	20.3	20.4
Cycle Q Clear(g_c), s	11.8	12.8	7.7	1.9	0.0	8.8	13.1	26.4	26.4	0.8	20.3	20.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.30
Lane Grp Cap(c), veh/h	278	412	315	192	0	313	300	812	843	50	540	534
V/C Ratio(X)	0.80	0.69	0.69	0.19	0.00	0.62	0.82	0.76	0.76	0.30	0.80	0.80
Avail Cap(c_a), veh/h	306	867	663	192	0	666	326	954	992	101	710	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	32.7	12.2	36.3	0.0	35.2	35.7	20.6	20.7	43.2	29.1	29.3
Incr Delay (d2), s/veh	12.9	2.1	2.7	0.5	0.0	2.0	13.9	3.1	3.0	3.3	4.8	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	5.5	3.9	0.7	0.0	3.9	5.9	9.9	10.3	0.4	8.5	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	34.8	14.8	36.8	0.0	37.2	49.6	23.7	23.6	46.5	33.9	34.2
LnGrp LOS	D	C	B	D	A	D	D	C	C	D	C	C
Approach Vol, veh/h		723			232			1506			873	
Approach Delay, s/veh		33.2			37.2			27.9			34.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	45.6	14.7	24.0	20.7	31.7	19.4	19.3
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.1	47.4	5.8	40.7	16.6	34.9	15.5	31.0
Max Q Clear Time (g_c+I1), s	2.8	28.4	3.9	14.8	15.1	22.4	13.8	10.8
Green Ext Time (p_c), s	0.0	5.1	0.0	1.9	0.1	2.8	0.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

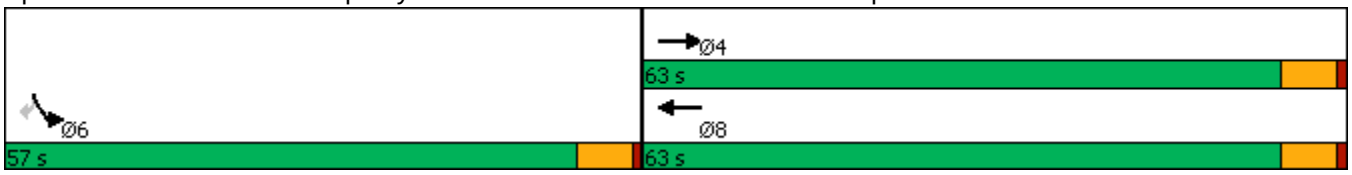


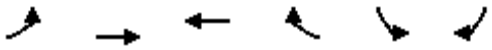
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	521	494	0	145	175
Future Volume (vph)	0	521	494	0	145	175
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						190
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	566	537	0	158	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	566	537	0	158	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		63.0	63.0		57.0	57.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		57.0	57.0		51.0	51.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		13.1	13.1		11.1	11.1
Actuated g/C Ratio		0.41	0.41		0.34	0.34
v/c Ratio		0.40	0.38		0.28	0.30
Control Delay		8.0	7.8		9.8	3.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.0	7.8		9.8	3.4
LOS		A	A		A	A
Approach Delay		8.0	7.8		6.3	
Approach LOS		A	A		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 32.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 32.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

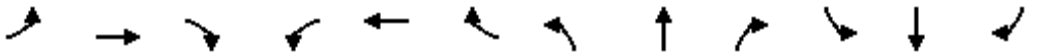




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	521	494	0	145	175
Future Volume (veh/h)	0	521	494	0	145	175
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	566	537	0	158	190
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1324	1324	0	513	457
Arrive On Green	0.00	0.37	0.37	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	566	537	0	158	190
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.0	2.8	0.0	1.9	2.6
Cycle Q Clear(g_c), s	0.0	3.0	2.8	0.0	1.9	2.6
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1324	1324	0	513	457
V/C Ratio(X)	0.00	0.43	0.41	0.00	0.31	0.42
Avail Cap(c_a), veh/h	0	8245	8245	0	3420	3043
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.0	5.9	0.0	6.6	6.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.2	6.1	0.0	7.0	7.5
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		566	537		348	
Approach Delay, s/veh		6.2	6.1		7.3	
Approach LOS		A	A		A	

Timer - Assigned Phs	4	6	8
Phs Duration (G+Y+Rc), s	13.5	12.0	13.5
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	57.0	51.0	57.0
Max Q Clear Time (g_c+I1), s	5.0	4.6	4.8
Green Ext Time (p_c), s	2.5	1.3	2.3

Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

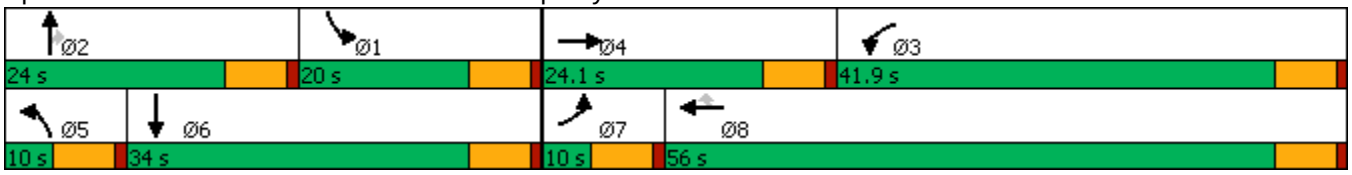


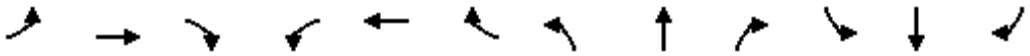
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	3	676	15	458	0	34	265	301	110	2
Future Volume (vph)	0	12	3	676	15	458	0	34	265	301	110	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.972				0.850			0.850		0.998	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1803	0	1548	1688	1458	1716	1863	1458	3162	1859	0
Flt Permitted				0.950	0.724					0.950		
Satd. Flow (perm)	1716	1803	0	1548	1281	1426	1716	1863	1458	3162	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				498			288		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	13	3	735	16	498	0	37	288	327	120	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	16	0	375	376	498	0	37	288	327	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		41.9	56.0	56.0	10.0	24.0	24.0	20.0	34.0	
Total Split (%)	9.1%	21.9%		38.1%	50.9%	50.9%	9.1%	21.8%	21.8%	18.2%	30.9%	
Maximum Green (s)	4.0	18.1		35.9	50.0	50.0	4.0	18.0	18.0	14.0	28.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		10.1		47.5	47.5	54.1		10.7	10.7	15.1	29.8	
Actuated g/C Ratio		0.11		0.52	0.52	0.59		0.12	0.12	0.16	0.32	
v/c Ratio		0.08		0.47	0.43	0.48		0.17	0.68	0.63	0.20	
Control Delay		33.7		20.9	19.8	2.7		39.1	13.6	43.1	23.4	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		33.7		20.9	19.8	2.7		39.1	13.6	43.1	23.4	
LOS		C		C	B	A		D	B	D	C	
Approach Delay		33.7			13.3			16.5			37.7	
Approach LOS		C			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 92			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave





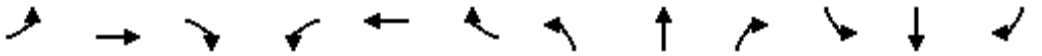
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	3	676	15	458	0	34	265	301	110	2
Future Volume (veh/h)	0	12	3	676	15	458	0	34	265	301	110	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	13	3	746	0	498	0	37	288	327	120	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	141	33	981	0	643	2	451	352	495	823	14
Arrive On Green	0.00	0.10	0.07	0.30	0.00	0.45	0.00	0.24	0.24	0.16	0.45	0.42
Sat Flow, veh/h	1641	1457	336	3281	0	1436	1641	1870	1460	3183	1834	31
Grp Volume(v), veh/h	0	0	16	746	0	498	0	37	288	327	0	122
Grp Sat Flow(s),veh/h/ln	1641	0	1794	1641	0	1436	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.6	15.9	0.0	9.9	0.0	1.2	14.4	7.5	0.0	3.0
Cycle Q Clear(g_c), s	0.0	0.0	0.6	15.9	0.0	9.9	0.0	1.2	14.4	7.5	0.0	3.0
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	173	981	0	643	2	451	352	495	0	837
V/C Ratio(X)	0.00	0.00	0.09	0.76	0.00	0.77	0.00	0.08	0.82	0.66	0.00	0.15
Avail Cap(c_a), veh/h	128	0	467	1612	0	968	128	485	378	660	0	837
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	31.9	24.5	0.0	3.9	0.0	22.7	27.7	30.7	0.0	12.6
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.2	0.0	2.2	0.0	0.1	12.5	1.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	5.5	0.0	4.6	0.0	0.5	5.6	2.7	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	32.2	25.8	0.0	6.2	0.0	22.7	40.1	32.2	0.0	12.6
LnGrp LOS	A	A	C	C	A	A	A	C	D	C	A	B
Approach Vol, veh/h		16			1244			325			449	
Approach Delay, s/veh		32.2			17.9			38.1			26.9	
Approach LOS		C			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	22.6	27.1	11.5	0.0	38.6	0.0	38.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	10.0	18.0	35.9	18.1	4.0	28.0	4.0	50.0
Max Q Clear Time (g_c+I1), s	9.5	16.4	17.9	2.6	0.0	5.0	0.0	11.9
Green Ext Time (p_c), s	0.6	0.2	3.2	0.0	0.0	0.3	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

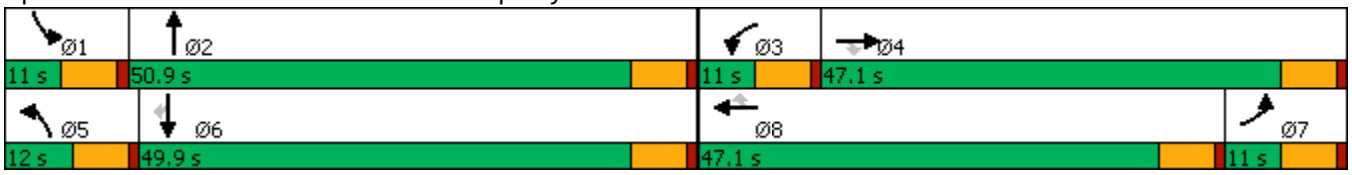


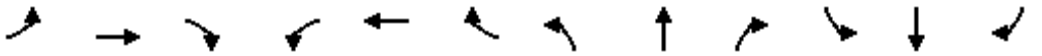
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	423	99	58	637	160	128	272	62	80	32	296
Future Volume (vph)	375	423	99	58	637	160	128	272	62	80	32	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3429	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3429	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			142		27				322
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	460	108	63	692	174	139	296	67	87	35	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	460	108	63	692	174	139	363	0	87	35	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	47.1	47.1	11.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	39.3%	39.3%	9.2%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	41.1	41.1	5.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	7.6	23.1	23.1	7.6	20.1	20.1	8.7	20.4		7.6	16.3	16.3
Actuated g/C Ratio	0.11	0.33	0.33	0.11	0.29	0.29	0.12	0.29		0.11	0.23	0.23
v/c Ratio	1.19	0.40	0.19	0.36	0.48	0.34	0.69	0.36		0.25	0.08	0.39
Control Delay	141.8	21.4	3.5	42.9	22.2	8.4	53.7	20.2		37.8	21.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	141.8	21.4	3.5	42.9	22.2	8.4	53.7	20.2		37.8	21.5	4.3
LOS	F	C	A	D	C	A	D	C		D	C	A
Approach Delay		69.8			21.0			29.5			12.2	
Approach LOS		E			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 70.2			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 37.8		Intersection LOS: D	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Hillman St & Prosperity Ave

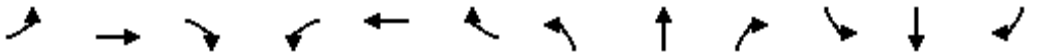




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	423	99	58	637	160	128	272	62	80	32	296
Future Volume (veh/h)	375	423	99	58	637	160	128	272	62	80	32	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	408	460	108	63	692	174	139	296	67	87	35	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	1122	447	129	1427	400	215	750	167	265	399	529
Arrive On Green	0.11	0.32	0.32	0.08	0.28	0.28	0.13	0.26	0.23	0.08	0.21	0.21
Sat Flow, veh/h	3183	3554	1416	1641	5106	1432	1641	2876	640	3183	1870	2480
Grp Volume(v), veh/h	408	460	108	63	692	174	139	181	182	87	35	322
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1432	1641	1777	1739	1591	1870	1240
Q Serve(g_s), s	7.0	6.2	3.5	2.2	6.9	3.7	4.9	5.1	5.3	1.6	0.9	4.3
Cycle Q Clear(g_c), s	7.0	6.2	3.5	2.2	6.9	3.7	4.9	5.1	5.3	1.6	0.9	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	365	1122	447	129	1427	400	215	464	454	265	399	529
V/C Ratio(X)	1.12	0.41	0.24	0.49	0.48	0.43	0.65	0.39	0.40	0.33	0.09	0.61
Avail Cap(c_a), veh/h	365	2506	999	188	3601	1010	215	1363	1335	365	1405	1862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	16.4	15.5	27.0	18.3	6.8	25.2	18.6	19.0	26.4	19.3	8.0
Incr Delay (d2), s/veh	83.5	0.2	0.3	2.9	0.3	0.7	6.6	0.5	0.6	0.7	0.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	2.0	0.9	0.9	2.2	1.6	2.0	1.8	1.8	0.5	0.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.5	16.7	15.8	29.8	18.6	7.5	31.8	19.1	19.5	27.1	19.4	9.1
LnGrp LOS	F	B	B	C	B	A	C	B	B	C	B	A
Approach Vol, veh/h		976			929			502			444	
Approach Delay, s/veh		55.8			17.3			22.8			13.4	
Approach LOS		E			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	19.9	8.8	23.3	12.0	17.0	11.0	21.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	5.0	41.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	3.6	7.3	4.2	8.2	6.9	6.3	9.0	8.9
Green Ext Time (p_c), s	0.0	1.3	0.0	2.4	0.0	1.7	0.0	4.0

Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

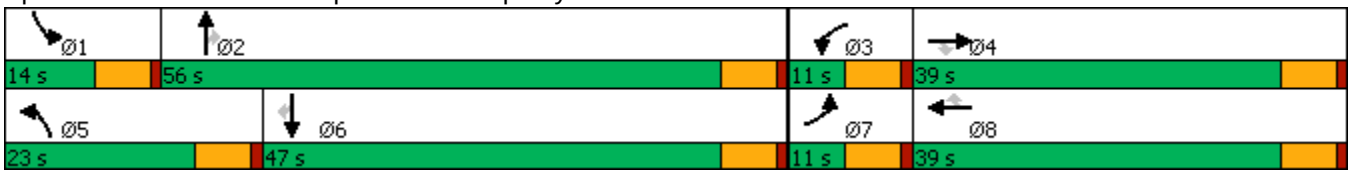


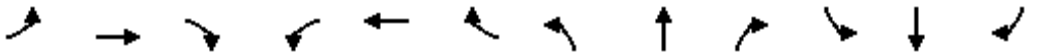
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	370	102	63	458	73	123	180	69	55	169	99
Future Volume (vph)	53	370	102	63	458	73	123	180	69	55	169	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1416	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	402	111	68	498	79	134	196	75	60	184	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	402	111	68	498	79	134	196	75	60	184	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	11.0	39.0	39.0	11.0	39.0	39.0	23.0	56.0	56.0	14.0	47.0	47.0
Total Split (%)	9.2%	32.5%	32.5%	9.2%	32.5%	32.5%	19.2%	46.7%	46.7%	11.7%	39.2%	39.2%
Maximum Green (s)	5.0	33.0	33.0	5.0	33.0	33.0	17.0	50.0	50.0	8.0	41.0	41.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	8.6	18.1	18.1	8.6	18.1	18.1	14.7	24.6	24.6	10.8	18.5	18.5
Actuated g/C Ratio	0.13	0.27	0.27	0.13	0.27	0.27	0.22	0.36	0.36	0.16	0.27	0.27
v/c Ratio	0.28	0.43	0.22	0.33	0.37	0.15	0.38	0.29	0.12	0.23	0.36	0.20
Control Delay	42.1	26.3	1.0	43.0	24.8	0.6	34.4	19.3	0.5	37.9	25.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	26.3	1.0	43.0	24.8	0.6	34.4	19.3	0.5	37.9	25.7	0.9
LOS	D	C	A	D	C	A	C	B	A	D	C	A
Approach Delay		23.0			23.7			20.8			20.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 67.9			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 48.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Laspina St & Prosperity Ave

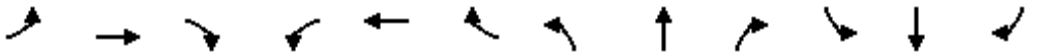




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	370	102	63	458	73	123	180	69	55	169	99
Future Volume (veh/h)	53	370	102	63	458	73	123	180	69	55	169	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	58	402	111	68	498	79	134	196	75	60	184	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	826	328	144	1213	335	232	532	402	137	424	324
Arrive On Green	0.08	0.23	0.23	0.09	0.24	0.24	0.14	0.28	0.28	0.08	0.23	0.23
Sat Flow, veh/h	1641	3554	1411	1641	5106	1411	1641	1870	1414	1641	1870	1430
Grp Volume(v), veh/h	58	402	111	68	498	79	134	196	75	60	184	108
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1702	1411	1641	1870	1414	1641	1870	1430
Q Serve(g_s), s	1.7	5.0	3.4	2.0	4.2	2.3	3.9	4.3	2.1	1.8	4.3	3.2
Cycle Q Clear(g_c), s	1.7	5.0	3.4	2.0	4.2	2.3	3.9	4.3	2.1	1.8	4.3	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	826	328	144	1213	335	232	532	402	137	424	324
V/C Ratio(X)	0.43	0.49	0.34	0.47	0.41	0.24	0.58	0.37	0.19	0.44	0.43	0.33
Avail Cap(c_a), veh/h	224	2422	961	224	3479	962	607	1894	1432	319	1566	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.1	16.4	22.3	16.5	15.8	20.6	14.7	13.9	22.4	17.0	16.6
Incr Delay (d2), s/veh	2.1	0.4	0.6	2.4	0.2	0.4	2.3	0.4	0.2	2.2	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.6	0.9	0.7	1.3	0.6	1.3	1.4	0.5	0.6	1.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	17.5	17.0	24.7	16.8	16.2	22.9	15.1	14.1	24.6	17.7	17.2
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		571			645			405			352	
Approach Delay, s/veh		18.1			17.5			17.5			18.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	18.6	8.5	15.9	11.3	15.6	8.3	16.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	50.0	5.0	33.0	17.0	41.0	5.0	33.0
Max Q Clear Time (g_c+I1), s	3.8	6.3	4.0	7.0	5.9	6.3	3.7	6.2
Green Ext Time (p_c), s	0.0	1.0	0.0	2.1	0.3	1.0	0.0	2.5

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

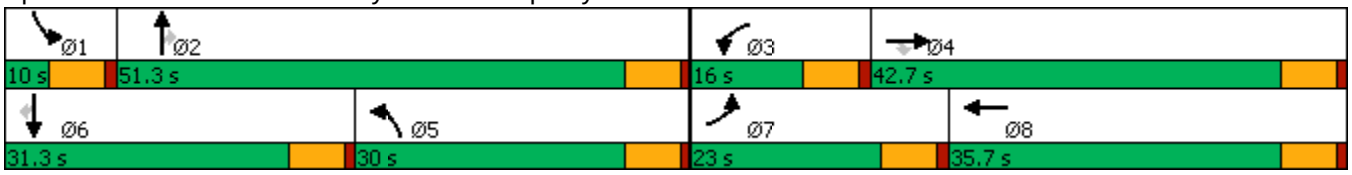


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	276	256	155	191	92	332	1070	92	44	663	155
Future Volume (vph)	233	276	256	155	191	92	332	1070	92	44	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1760	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1760	0	1630	3539	1410	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		20				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	300	278	168	208	100	361	1163	100	48	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	300	278	168	308	0	361	1163	100	48	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	16.0	35.7		30.0	51.3	51.3	10.0	31.3	31.3
Total Split (%)	19.2%	35.6%	35.6%	13.3%	29.8%		25.0%	42.8%	42.8%	8.3%	26.1%	26.1%
Maximum Green (s)	17.0	36.7	36.7	10.0	29.7		24.0	45.3	45.3	4.0	25.3	25.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	19.1	32.1	32.1	12.0	25.1		26.1	48.8	48.8	6.0	26.5	26.5
Actuated g/C Ratio	0.17	0.28	0.28	0.11	0.22		0.23	0.43	0.43	0.05	0.23	0.23
v/c Ratio	0.92	0.57	0.46	0.97	0.76		0.96	0.76	0.14	0.56	0.87	0.35
Control Delay	84.9	38.9	6.1	112.5	50.9		81.7	32.6	0.4	78.5	54.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.9	38.9	6.1	112.5	50.9		81.7	32.6	0.4	78.5	54.2	5.7
LOS	F	D	A	F	D		F	C	A	E	D	A
Approach Delay		42.0			72.6			41.5			46.7	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 112.8			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 46.7		Intersection LOS: D	
Intersection Capacity Utilization 82.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	276	256	155	191	92	332	1070	92	44	663	155
Future Volume (veh/h)	233	276	256	155	191	92	332	1070	92	44	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	300	278	168	208	100	361	1163	100	48	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	523	400	176	257	123	382	1478	590	88	841	338
Arrive On Green	0.17	0.28	0.28	0.11	0.22	0.20	0.23	0.42	0.42	0.05	0.24	0.24
Sat Flow, veh/h	1641	1870	1432	1641	1184	569	1641	3554	1420	1641	3554	1431
Grp Volume(v), veh/h	253	300	278	168	0	308	361	1163	100	48	721	168
Grp Sat Flow(s),veh/h/ln	1641	1870	1432	1641	0	1753	1641	1777	1420	1641	1777	1431
Q Serve(g_s), s	16.9	15.4	10.2	11.4	0.0	18.7	24.1	31.7	4.9	3.2	21.7	7.2
Cycle Q Clear(g_c), s	16.9	15.4	10.2	11.4	0.0	18.7	24.1	31.7	4.9	3.2	21.7	7.2
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	279	523	400	176	0	380	382	1478	590	88	841	338
V/C Ratio(X)	0.91	0.57	0.69	0.95	0.00	0.81	0.94	0.79	0.17	0.54	0.86	0.50
Avail Cap(c_a), veh/h	279	649	497	176	0	498	382	1507	602	88	870	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	34.5	10.0	49.5	0.0	41.8	42.1	28.3	20.5	51.5	40.8	14.9
Incr Delay (d2), s/veh	30.6	1.0	3.1	53.7	0.0	7.5	32.0	2.8	0.1	6.7	8.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	6.7	6.0	7.1	0.0	8.4	12.5	12.8	1.5	1.4	9.9	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.0	35.5	13.1	103.2	0.0	49.3	74.1	31.1	20.6	58.2	49.1	16.0
LnGrp LOS	E	D	B	F	A	D	E	C	C	E	D	B
Approach Vol, veh/h		831			476			1624			937	
Approach Delay, s/veh		40.3			68.3			40.0			43.7	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	50.4	16.0	35.2	30.0	30.4	23.0	28.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	45.3	10.0	36.7	24.0	25.3	17.0	29.7
Max Q Clear Time (g_c+I1), s	5.2	33.7	13.4	17.4	26.1	23.7	18.9	20.7
Green Ext Time (p_c), s	0.0	4.6	0.0	2.1	0.0	0.7	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	44.5
HCM 6th LOS	D



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	7	41	392	37	70
Future Volume (vph)	390	7	41	392	37	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1857	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1857	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	8	45	426	40	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	0	0	471	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

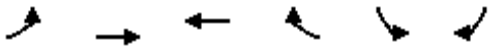
Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	7	41	392	37	70
Future Vol, veh/h	390	7	41	392	37	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	424	8	45	426	40	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	432	0	944	428
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1128	-	291	627
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1128	-	276	627
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	568	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	435	-	-	1128	-
HCM Lane V/C Ratio	0.267	-	-	0.04	-
HCM Control Delay (s)	16.3	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	283	269	49	29	153
Future Volume (vph)	169	283	269	49	29	153
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.887	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1824	0	1510	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1824	0	1510	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	308	292	53	32	166
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	492	345	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	169	283	269	49	29	153
Future Vol, veh/h	169	283	269	49	29	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	184	308	292	53	32	166

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	345	0	-	0	995	319
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	676	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1214	-	-	-	271	722
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1214	-	-	-	221	722
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	505	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1214	-	-	-	530
HCM Lane V/C Ratio	0.151	-	-	-	0.373
HCM Control Delay (s)	8.5	0	-	-	15.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	1.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	367	1400	29	78	1015
Future Volume (vph)	2	367	1400	29	78	1015
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	399	1522	32	85	1103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	399	1522	32	85	1103
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	16.8

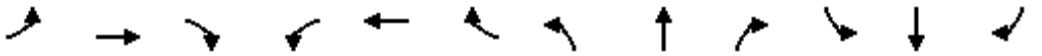
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	367	1400	29	78	1015
Future Vol, veh/h	2	367	1400	29	78	1015
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None		None		None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	399	1522	32	85	1103

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2244	761	0	0	1554	0
Stage 1	1522	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	36	~ 348	-	-	422	-
Stage 1	166	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	29	~ 348	-	-	422	-
Mov Cap-2 Maneuver	29	-	-	-	-	-
Stage 1	166	-	-	-	-	-
Stage 2	353	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	128.4	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	348	422	-
HCM Lane V/C Ratio	-	-	1.146	0.201	-
HCM Control Delay (s)	-	-	128.4	15.7	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	15.8	0.7	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

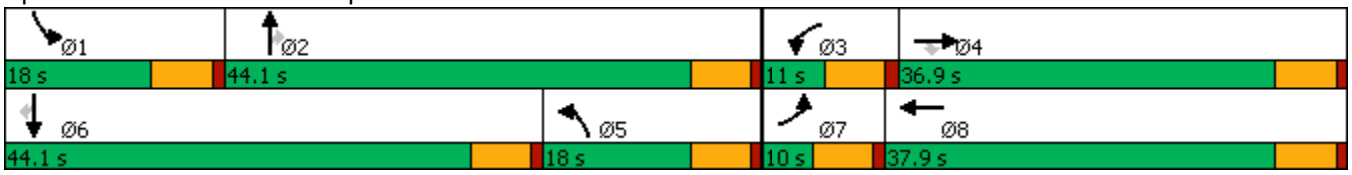


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	615	107	66	932	65	127	225	62	58	189	70
Future Volume (vph)	80	615	107	66	932	65	127	225	62	58	189	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	3496	0	1630	1863	1432	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208		7				149			149
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	668	116	72	1013	71	138	245	67	63	205	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	668	116	72	1084	0	138	245	67	63	205	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	10.0	36.9	36.9	11.0	37.9		18.0	44.1	44.1	18.0	44.1	44.1
Total Split (%)	9.1%	33.5%	33.5%	10.0%	34.5%		16.4%	40.1%	40.1%	16.4%	40.1%	40.1%
Maximum Green (s)	4.0	30.9	30.9	5.0	31.9		12.0	38.1	38.1	12.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	6.1	35.9	35.9	7.1	34.4		13.1	24.6	24.6	10.7	19.5	19.5
Actuated g/C Ratio	0.07	0.40	0.40	0.08	0.39		0.15	0.28	0.28	0.12	0.22	0.22
v/c Ratio	0.78	0.47	0.17	0.56	0.80		0.58	0.48	0.13	0.32	0.50	0.18
Control Delay	87.7	24.0	0.5	60.6	31.8		48.6	31.2	0.5	43.2	34.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.7	24.0	0.5	60.6	31.8		48.6	31.2	0.5	43.2	34.3	0.9
LOS	F	C	A	E	C		D	C	A	D	C	A
Approach Delay		27.2			33.6			32.0			28.5	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 89.3			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

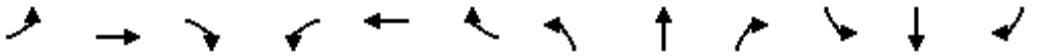
Splits and Phases: 10: Laspina St & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	615	107	66	932	65	127	225	62	58	189	70
Future Volume (veh/h)	80	615	107	66	932	65	127	225	62	58	189	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	87	668	116	72	1013	71	138	245	67	63	205	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	1317	525	132	1243	87	212	483	370	122	379	290
Arrive On Green	0.08	0.37	0.37	0.08	0.37	0.34	0.13	0.26	0.26	0.07	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	3361	236	1641	1870	1432	1641	1870	1429
Grp Volume(v), veh/h	87	668	116	72	535	549	138	245	67	63	205	76
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1820	1641	1870	1432	1641	1870	1429
Q Serve(g_s), s	3.8	10.8	2.2	3.1	20.1	20.1	5.9	8.3	2.7	2.7	7.2	2.3
Cycle Q Clear(g_c), s	3.8	10.8	2.2	3.1	20.1	20.1	5.9	8.3	2.7	2.7	7.2	2.3
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	133	1317	525	132	657	673	212	483	370	122	379	290
V/C Ratio(X)	0.65	0.51	0.22	0.54	0.81	0.82	0.65	0.51	0.18	0.52	0.54	0.26
Avail Cap(c_a), veh/h	133	1583	632	155	815	835	311	1015	777	311	1015	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	18.0	4.6	32.7	21.0	21.1	30.6	23.4	21.3	32.9	26.4	12.0
Incr Delay (d2), s/veh	10.8	0.3	0.2	3.5	5.2	5.1	3.3	0.8	0.2	3.4	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.7	1.1	1.2	7.8	8.0	2.3	3.3	0.8	1.1	3.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	18.3	4.8	36.1	26.2	26.3	33.9	24.2	21.6	36.3	27.6	12.4
LnGrp LOS	D	B	A	D	C	C	C	C	C	D	C	B
Approach Vol, veh/h		871			1156			450			344	
Approach Delay, s/veh		19.1			26.9			26.8			25.8	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.1	9.9	31.4	13.6	19.0	10.0	31.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	38.1	5.0	30.9	12.0	38.1	4.0	31.9
Max Q Clear Time (g_c+I1), s	4.7	10.3	5.1	12.8	7.9	9.2	5.8	22.1
Green Ext Time (p_c), s	0.1	1.1	0.0	3.2	0.1	1.0	0.0	3.2

Intersection Summary	
HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

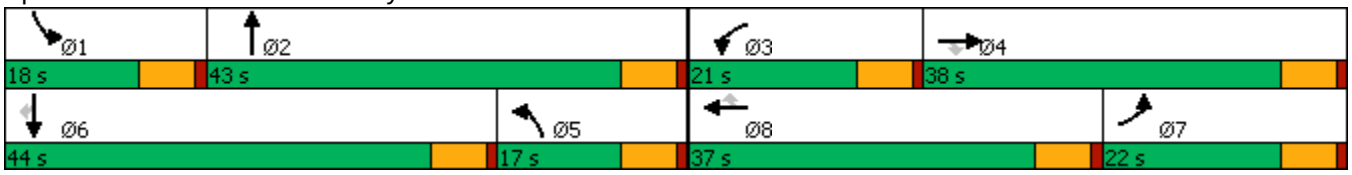


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	525	131	114	661	322	220	898	101	183	494	235
Future Volume (vph)	313	525	131	114	661	322	220	898	101	183	494	235
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			230		11				255
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	571	142	124	718	350	239	976	110	199	537	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	571	142	124	718	350	239	1086	0	199	537	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	38.0	38.0	21.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	31.7%	31.7%	17.5%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	32.0	32.0	15.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.0	33.5	33.5	14.9	30.3	30.3	15.2	38.7		14.0	37.5	37.5
Actuated g/C Ratio	0.15	0.29	0.29	0.13	0.26	0.26	0.13	0.33		0.12	0.32	0.32
v/c Ratio	1.36	0.56	0.26	0.60	0.78	0.65	1.13	0.94		1.02	0.90	0.40
Control Delay	223.4	38.5	2.8	61.2	47.2	19.0	148.0	53.9		121.8	57.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	223.4	38.5	2.8	61.2	47.2	19.0	148.0	53.9		121.8	57.7	5.5
LOS	F	D	A	E	D	B	F	D		F	E	A
Approach Delay		93.4			40.4			70.9			57.2	
Approach LOS		F			D			E			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 117.1			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 65.1		Intersection LOS: E	
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			

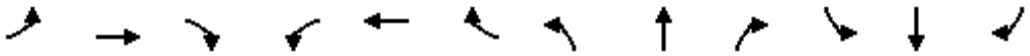
Splits and Phases: 11: Mooney Blvd & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	525	131	114	661	322	220	898	101	183	494	235
Future Volume (veh/h)	313	525	131	114	661	322	220	898	101	183	494	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	340	571	142	124	718	350	239	976	110	199	537	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	1073	427	175	901	363	215	1065	120	198	602	462
Arrive On Green	0.16	0.30	0.30	0.11	0.25	0.25	0.13	0.33	0.31	0.12	0.32	0.32
Sat Flow, veh/h	1641	3554	1415	1641	3554	1431	1641	3208	361	1641	1870	1434
Grp Volume(v), veh/h	340	571	142	124	718	350	239	541	545	199	537	255
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1431	1641	1777	1792	1641	1870	1434
Q Serve(g_s), s	18.0	15.5	6.0	8.5	21.9	19.6	15.2	33.8	33.9	14.0	31.6	17.0
Cycle Q Clear(g_c), s	18.0	15.5	6.0	8.5	21.9	19.6	15.2	33.8	33.9	14.0	31.6	17.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	255	1073	427	175	901	363	215	590	595	198	602	462
V/C Ratio(X)	1.33	0.53	0.33	0.71	0.80	0.96	1.11	0.92	0.92	1.00	0.89	0.55
Avail Cap(c_a), veh/h	255	1073	427	241	1013	408	215	598	603	198	646	495
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	33.6	13.8	50.0	40.4	20.9	50.3	37.1	37.3	50.9	37.3	32.4
Incr Delay (d2), s/veh	174.3	0.5	0.5	5.7	4.1	33.7	94.7	18.9	18.8	64.8	14.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.3	6.3	2.8	3.6	9.5	9.3	11.6	16.7	16.9	9.0	15.8	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	223.2	34.1	14.3	55.6	44.5	54.6	145.0	56.0	56.2	115.7	51.4	33.5
LnGrp LOS	F	C	B	E	D	D	F	E	E	F	D	C
Approach Vol, veh/h		1053			1192			1325			991	
Approach Delay, s/veh		92.5			48.6			72.1			59.7	
Approach LOS		F			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	42.5	16.4	39.0	19.2	41.3	22.0	33.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	15.0	32.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	10.0	35.9	10.5	17.5	17.2	33.6	20.0	23.9
Green Ext Time (p_c), s	0.0	0.6	0.1	2.6	0.0	1.4	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	68.0
HCM 6th LOS	E



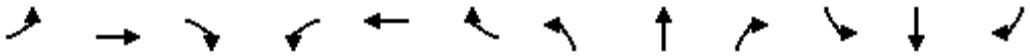
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	640	74	43	792	0	129	72	136	0	26	15
Future Volume (vph)	31	640	74	43	792	0	129	72	136	0	26	15
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.945			0.951	
Flt Protected		0.998			0.997			0.981				
Satd. Flow (prot)	0	1835	0	0	1857	0	0	1727	0	0	1771	0
Flt Permitted		0.998			0.997			0.981				
Satd. Flow (perm)	0	1835	0	0	1857	0	0	1727	0	0	1771	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	696	80	47	861	0	140	78	148	0	28	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	810	0	0	908	0	0	366	0	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	18.3
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	810	908	366	44
Demand Flow Rate, veh/h	827	926	374	45
Vehicles Circulating, veh/h	77	258	745	1069
Vehicles Exiting, veh/h	1037	861	159	115
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.3	25.9	16.1	9.2
Approach LOS	B	D	C	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	827	926	374	45
Cap Entry Lane, veh/h	1276	1061	645	464
Entry HV Adj Factor	0.980	0.980	0.980	0.987
Flow Entry, veh/h	810	908	366	44
Cap Entry, veh/h	1250	1040	632	458
V/C Ratio	0.648	0.873	0.579	0.097
Control Delay, s/veh	11.3	25.9	16.1	9.2
LOS	B	D	C	A
95th %tile Queue, veh	5	12	4	0

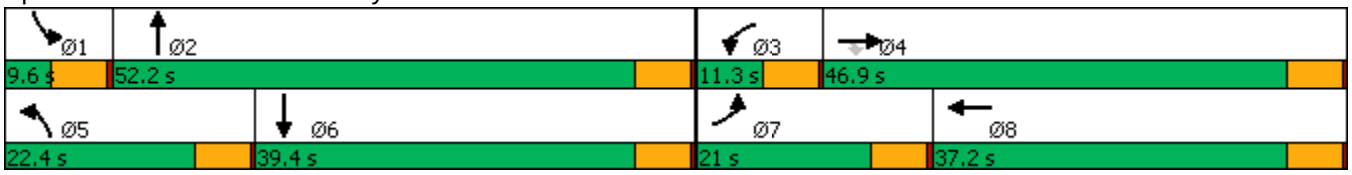


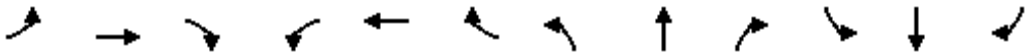
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218		1			3			16	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	218	37	192	3	249	1246	40	15	746	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	218	37	195	0	249	1286	0	15	872	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	46.9	46.9	11.3	37.2		22.4	52.2		9.6	39.4	
Total Split (%)	17.5%	39.1%	39.1%	9.4%	31.0%		18.7%	43.5%		8.0%	32.8%	
Maximum Green (s)	15.5	41.4	41.4	5.8	31.7		16.9	46.7		4.1	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	17.2	33.7	33.7	7.3	18.8		18.6	50.3		5.7	31.1	
Actuated g/C Ratio	0.17	0.33	0.33	0.07	0.18		0.18	0.49		0.06	0.31	
v/c Ratio	0.81	0.46	0.35	0.32	0.57		0.84	0.74		0.17	0.82	
Control Delay	66.0	31.7	5.4	56.8	44.5		66.9	25.9		55.3	40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.0	31.7	5.4	56.8	44.5		66.9	25.9		55.3	40.3	
LOS	E	C	A	E	D		E	C		E	D	
Approach Delay		34.3			46.5			32.5			40.5	
Approach LOS		C			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101.9			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 36.0		Intersection LOS: D	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

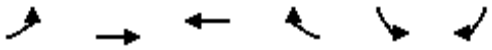




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	218	37	192	3	249	1246	40	15	746	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	548	420	71	307	5	303	1616	52	49	924	156
Arrive On Green	0.17	0.29	0.29	0.04	0.17	0.15	0.18	0.46	0.44	0.03	0.31	0.29
Sat Flow, veh/h	1641	1870	1433	1641	1836	29	1641	3511	113	1641	3025	511
Grp Volume(v), veh/h	222	285	218	37	0	195	249	630	656	15	438	434
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1864	1641	1777	1846	1641	1777	1759
Q Serve(g_s), s	12.0	11.7	11.7	2.0	0.0	9.0	13.4	27.3	27.4	0.8	20.9	21.0
Cycle Q Clear(g_c), s	12.0	11.7	11.7	2.0	0.0	9.0	13.4	27.3	27.4	0.8	20.9	21.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	277	548	420	71	0	312	303	818	850	49	543	537
V/C Ratio(X)	0.80	0.52	0.52	0.52	0.00	0.63	0.82	0.77	0.77	0.30	0.81	0.81
Avail Cap(c_a), veh/h	303	870	667	130	0	671	327	929	965	100	682	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	27.2	27.2	43.2	0.0	35.7	36.1	20.8	20.9	43.8	29.5	29.7
Incr Delay (d2), s/veh	13.3	0.8	1.0	5.9	0.0	2.1	14.4	3.5	3.4	3.4	5.7	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	4.9	3.7	0.9	0.0	3.9	6.2	10.4	10.8	0.4	8.9	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.2	28.0	28.2	49.0	0.0	37.8	50.5	24.3	24.3	47.2	35.2	35.5
LnGrp LOS	D	C	C	D	A	D	D	C	C	D	D	D
Approach Vol, veh/h		725			232			1535			887	
Approach Delay, s/veh		34.8			39.6			28.6			35.6	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	46.4	8.0	31.0	21.0	32.2	19.6	19.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.1	46.7	5.8	41.4	16.9	33.9	15.5	31.7
Max Q Clear Time (g_c+I1), s	2.8	29.4	4.0	13.7	15.4	23.0	14.0	11.0
Green Ext Time (p_c), s	0.0	5.1	0.0	1.9	0.1	2.7	0.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

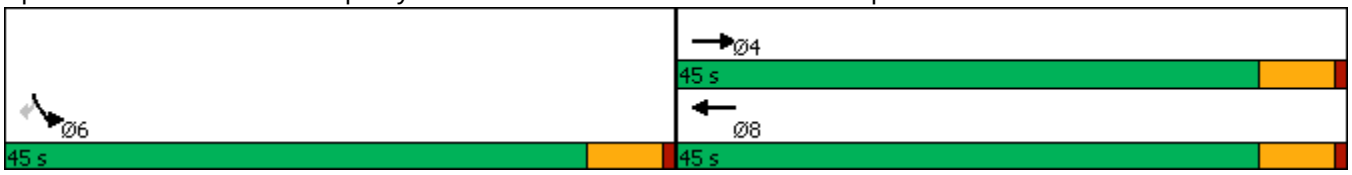


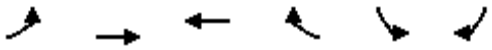
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	527	544	0	159	175
Future Volume (vph)	0	527	544	0	159	175
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						190
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	573	591	0	173	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	573	591	0	173	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		13.1	13.1		11.3	11.3
Actuated g/C Ratio		0.40	0.40		0.35	0.35
v/c Ratio		0.40	0.42		0.31	0.30
Control Delay		8.2	8.3		10.0	3.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.2	8.3		10.0	3.4
LOS		A	A		A	A
Approach Delay		8.2	8.3		6.5	
Approach LOS		A	A		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 32.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 33.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

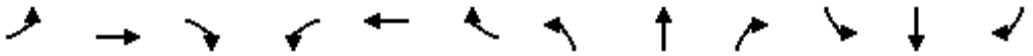




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	527	544	0	159	175
Future Volume (veh/h)	0	527	544	0	159	175
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	573	591	0	173	190
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1343	1343	0	511	455
Arrive On Green	0.00	0.38	0.38	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	573	591	0	173	190
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.1	3.2	0.0	2.1	2.7
Cycle Q Clear(g_c), s	0.0	3.1	3.2	0.0	2.1	2.7
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1343	1343	0	511	455
V/C Ratio(X)	0.00	0.43	0.44	0.00	0.34	0.42
Avail Cap(c_a), veh/h	0	5653	5653	0	2610	2322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.9	6.0	0.0	6.8	7.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.2	6.2	0.0	7.2	7.6
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		573	591		363	
Approach Delay, s/veh		6.2	6.2		7.4	
Approach LOS		A	A		A	

Timer - Assigned Phs	4	6	8
Phs Duration (G+Y+Rc), s	13.7	12.0	13.7
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s	5.1	4.7	5.2
Green Ext Time (p_c), s	2.5	1.4	2.5

Intersection Summary	
HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

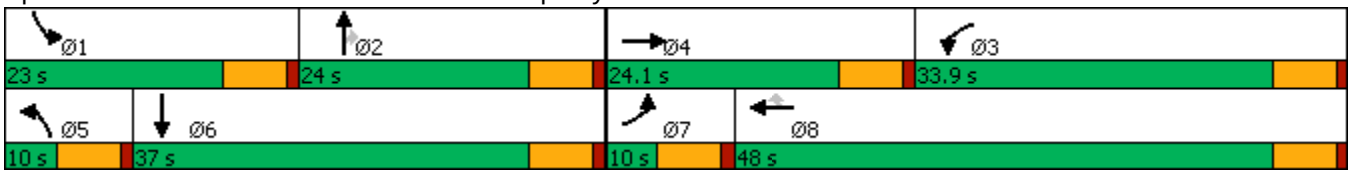


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	3	699	15	499	0	34	277	316	110	2
Future Volume (vph)	0	12	3	699	15	499	0	34	277	316	110	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.972				0.850			0.850		0.998	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1803	0	1548	1688	1458	1716	1863	1458	3162	1859	0
Flt Permitted				0.950	0.723					0.950		
Satd. Flow (perm)	1716	1803	0	1548	1279	1427	1716	1863	1458	3162	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				542			301		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	13	3	760	16	542	0	37	301	343	120	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	16	0	388	388	542	0	37	301	343	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		33.9	48.0	48.0	10.0	24.0	24.0	23.0	37.0	
Total Split (%)	9.5%	23.0%		32.3%	45.7%	45.7%	9.5%	22.9%	22.9%	21.9%	35.2%	
Maximum Green (s)	4.0	18.1		27.9	42.0	42.0	4.0	18.0	18.0	17.0	31.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		10.0		39.7	39.7	46.2		10.7	10.7	15.8	30.5	
Actuated g/C Ratio		0.12		0.47	0.47	0.54		0.13	0.13	0.19	0.36	
v/c Ratio		0.07		0.54	0.49	0.53		0.16	0.67	0.58	0.18	
Control Delay		31.1		24.8	23.3	3.3		35.7	12.8	36.9	19.2	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		31.1		24.8	23.3	3.3		35.7	12.8	36.9	19.2	
LOS		C		C	C	A		D	B	D	B	
Approach Delay		31.1			15.5			15.3			32.2	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Blackstone St & Prosperity Ave



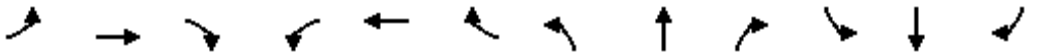
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	3	699	15	499	0	34	277	316	110	2
Future Volume (veh/h)	0	12	3	699	15	499	0	34	277	316	110	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	13	3	771	0	542	0	37	301	343	120	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	3	167	38	1046	0	713	3	255	199	564	691	12
Arrive On Green	0.00	0.11	0.08	0.32	0.00	0.50	0.00	0.14	0.14	0.18	0.38	0.35
Sat Flow, veh/h	1641	1459	337	3281	0	1437	1641	1870	1460	3183	1834	31
Grp Volume(v), veh/h	0	0	16	771	0	542	0	37	301	343	0	122
Grp Sat Flow(s),veh/h/ln	1641	0	1795	1641	0	1437	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.5	13.2	0.0	19.2	0.0	1.1	3.5	6.3	0.0	2.8
Cycle Q Clear(g_c), s	0.0	0.0	0.5	13.2	0.0	19.2	0.0	1.1	3.5	6.3	0.0	2.8
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	3	0	205	1046	0	713	3	255	199	564	0	703
V/C Ratio(X)	0.00	0.00	0.08	0.74	0.00	0.76	0.00	0.15	1.51	0.61	0.00	0.17
Avail Cap(c_a), veh/h	156	0	572	1556	0	1003	156	593	463	959	0	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.1	19.1	0.0	12.8	0.0	24.0	4.6	23.9	0.0	13.1
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.0	0.0	2.2	0.0	0.3	242.8	1.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.2	4.1	0.0	4.6	0.0	0.4	15.7	2.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	25.3	20.2	0.0	15.0	0.0	24.3	247.4	25.0	0.0	13.2
LnGrp LOS	A	A	C	C	A	B	A	C	F	C	A	B
Approach Vol, veh/h		16			1313			338			465	
Approach Delay, s/veh		25.3			18.0			222.9			21.9	
Approach LOS		C			B			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	12.6	24.1	11.2	0.0	27.8	0.0	35.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	17.0	18.0	27.9	18.1	4.0	31.0	4.0	42.0
Max Q Clear Time (g_c+I1), s	8.3	5.5	15.2	2.5	0.0	4.8	0.0	21.2
Green Ext Time (p_c), s	0.9	1.1	2.9	0.0	0.0	0.3	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	51.4
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

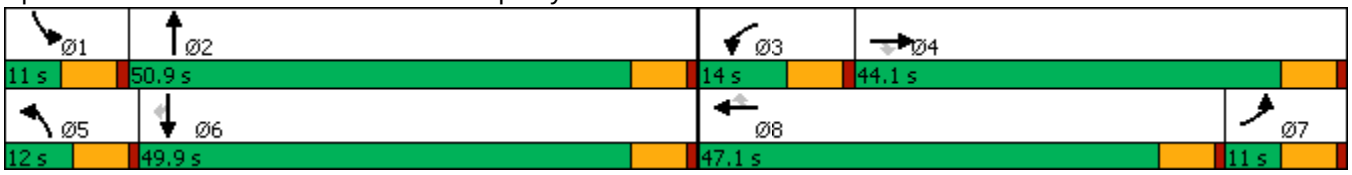


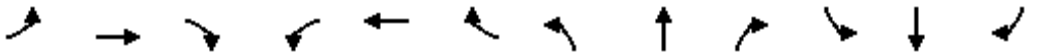
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	461	99	84	724	172	128	272	101	86	32	296
Future Volume (vph)	375	461	99	84	724	172	128	272	101	86	32	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3378	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3378	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		52				302
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	501	108	91	787	187	139	296	110	93	35	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	501	108	91	787	187	139	406	0	93	35	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	8.3	23.0	23.0	10.5	21.6	21.6	8.7	21.1		7.6	16.9	16.9
Actuated g/C Ratio	0.11	0.32	0.32	0.14	0.30	0.30	0.12	0.29		0.10	0.23	0.23
v/c Ratio	1.13	0.45	0.20	0.39	0.52	0.36	0.72	0.40		0.28	0.08	0.40
Control Delay	120.2	23.9	3.8	40.9	23.1	9.7	58.2	20.1		39.5	22.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	120.2	23.9	3.8	40.9	23.1	9.7	58.2	20.1		39.5	22.2	5.2
LOS	F	C	A	D	C	A	E	C		D	C	A
Approach Delay		60.4			22.3			29.8			13.6	
Approach LOS		E			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 72.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 34.9		Intersection LOS: C	
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Hillman St & Prosperity Ave

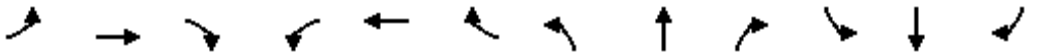




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	461	99	84	724	172	128	272	101	86	32	296
Future Volume (veh/h)	375	461	99	84	724	172	128	272	101	86	32	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	408	501	108	91	787	187	139	296	110	93	35	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	1096	437	164	1518	426	208	649	235	263	396	525
Arrive On Green	0.11	0.31	0.31	0.10	0.30	0.30	0.13	0.26	0.22	0.08	0.21	0.21
Sat Flow, veh/h	3183	3554	1416	1641	5106	1433	1641	2538	921	3183	1870	2479
Grp Volume(v), veh/h	408	501	108	91	787	187	139	205	201	93	35	322
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1433	1641	1777	1682	1591	1870	1240
Q Serve(g_s), s	7.0	7.2	3.6	3.3	8.1	4.1	5.1	6.1	6.5	1.7	0.9	4.6
Cycle Q Clear(g_c), s	7.0	7.2	3.6	3.3	8.1	4.1	5.1	6.1	6.5	1.7	0.9	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	353	1096	437	164	1518	426	208	454	430	263	396	525
V/C Ratio(X)	1.16	0.46	0.25	0.56	0.52	0.44	0.67	0.45	0.47	0.35	0.09	0.61
Avail Cap(c_a), veh/h	353	2257	899	260	3486	978	208	1320	1250	353	1360	1803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	17.6	16.3	27.1	18.4	6.7	26.3	19.8	20.4	27.4	20.0	8.6
Incr Delay (d2), s/veh	97.4	0.3	0.3	2.9	0.3	0.7	8.0	0.7	0.8	0.8	0.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	2.4	1.0	1.3	2.6	1.7	2.2	2.2	2.2	0.6	0.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	125.5	17.9	16.6	30.0	18.7	7.4	34.3	20.5	21.1	28.2	20.1	9.8
LnGrp LOS	F	B	B	C	B	A	C	C	C	C	C	A
Approach Vol, veh/h		1017			1065			545			450	
Approach Delay, s/veh		60.9			17.7			24.2			14.4	
Approach LOS		E			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	20.1	10.3	23.5	12.0	17.4	11.0	22.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	44.9	8.0	38.1	6.0	43.9	5.0	41.1
Max Q Clear Time (g_c+I1), s	3.7	8.5	5.3	9.2	7.1	6.6	9.0	10.1
Green Ext Time (p_c), s	0.0	1.5	0.0	2.6	0.0	1.7	0.0	4.6

Intersection Summary	
HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

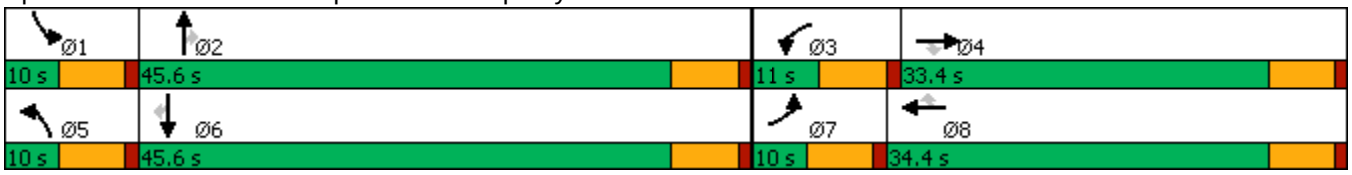


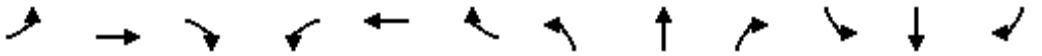
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	453	102	63	587	73	123	180	69	55	169	99
Future Volume (vph)	53	453	102	63	587	73	123	180	69	55	169	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	5085	1413	1630	1863	1418	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	492	111	68	638	79	134	196	75	60	184	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	492	111	68	638	79	134	196	75	60	184	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	10.0	33.4	33.4	11.0	34.4	34.4	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (%)	10.0%	33.4%	33.4%	11.0%	34.4%	34.4%	10.0%	45.6%	45.6%	10.0%	45.6%	45.6%
Maximum Green (s)	4.0	27.4	27.4	5.0	28.4	28.4	4.0	39.6	39.6	4.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	6.6	17.2	17.2	7.7	20.2	20.2	6.6	20.4	20.4	6.6	17.1	17.1
Actuated g/C Ratio	0.11	0.28	0.28	0.12	0.32	0.32	0.11	0.33	0.33	0.11	0.27	0.27
v/c Ratio	0.34	0.51	0.22	0.34	0.39	0.14	0.78	0.32	0.13	0.35	0.36	0.21
Control Delay	40.1	22.9	2.4	38.4	19.1	0.5	66.3	20.6	0.5	40.5	21.2	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	22.9	2.4	38.4	19.1	0.5	66.3	20.6	0.5	40.5	21.2	1.8
LOS	D	C	A	D	B	A	E	C	A	D	C	A
Approach Delay		21.0			18.9			32.0			18.5	
Approach LOS		C			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 62.5			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Laspina St & Prosperity Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	453	102	63	587	73	123	180	69	55	169	99
Future Volume (veh/h)	53	453	102	63	587	73	123	180	69	55	169	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	58	492	111	68	638	79	134	196	75	60	184	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	924	367	144	1354	375	191	484	366	137	423	323
Arrive On Green	0.08	0.26	0.26	0.09	0.27	0.27	0.12	0.26	0.26	0.08	0.23	0.23
Sat Flow, veh/h	1641	3554	1413	1641	5106	1413	1641	1870	1413	1641	1870	1430
Grp Volume(v), veh/h	58	492	111	68	638	79	134	196	75	60	184	108
Grp Sat Flow(s),veh/h/ln	1641	1777	1413	1641	1702	1413	1641	1870	1413	1641	1870	1430
Q Serve(g_s), s	1.7	6.1	3.3	2.0	5.4	2.2	4.1	4.5	2.1	1.8	4.4	3.3
Cycle Q Clear(g_c), s	1.7	6.1	3.3	2.0	5.4	2.2	4.1	4.5	2.1	1.8	4.4	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	924	367	144	1354	375	191	484	366	137	423	323
V/C Ratio(X)	0.43	0.53	0.30	0.47	0.47	0.21	0.70	0.40	0.21	0.44	0.44	0.33
Avail Cap(c_a), veh/h	191	2024	805	223	3008	832	191	1508	1139	191	1508	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	16.4	15.3	22.4	15.9	14.8	21.9	15.8	15.0	22.5	17.1	16.7
Incr Delay (d2), s/veh	2.1	0.5	0.5	2.4	0.3	0.3	11.0	0.5	0.3	2.2	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.9	0.8	0.7	1.6	0.6	1.8	1.5	0.6	0.7	1.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.7	16.9	15.8	24.8	16.2	15.0	32.9	16.4	15.2	24.7	17.8	17.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		661			785			405			352	
Approach Delay, s/veh		17.4			16.8			21.6			18.9	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	17.4	8.5	17.4	10.0	15.7	8.3	17.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	39.6	5.0	27.4	4.0	39.6	4.0	28.4
Max Q Clear Time (g_c+I1), s	3.8	6.5	4.0	8.1	6.1	6.4	3.7	7.4
Green Ext Time (p_c), s	0.0	0.9	0.0	2.4	0.0	1.0	0.0	3.0

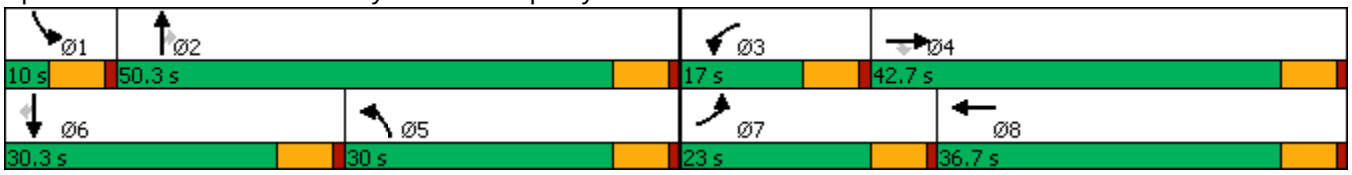
Intersection Summary	
HCM 6th Ctrl Delay	18.2
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.98			0.98
Frt			0.850		0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1779	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1779	0	1630	3539	1429	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		15				136			168
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	392	278	180	352	129	361	1163	110	64	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	392	278	180	481	0	361	1163	110	64	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	17.0	36.7		30.0	50.3	50.3	10.0	30.3	30.3
Total Split (%)	19.2%	35.6%	35.6%	14.2%	30.6%		25.0%	41.9%	41.9%	8.3%	25.3%	25.3%
Maximum Green (s)	17.0	36.7	36.7	11.0	30.7		24.0	44.3	44.3	4.0	24.3	24.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	19.0	38.7	38.7	13.0	32.7		26.0	46.3	46.3	6.0	26.3	26.3
Actuated g/C Ratio	0.16	0.32	0.32	0.11	0.27		0.22	0.39	0.39	0.05	0.22	0.22
v/c Ratio	0.98	0.65	0.43	1.02	0.97		1.02	0.85	0.17	0.79	0.93	0.38
Control Delay	102.1	41.0	5.6	126.7	76.4		100.4	41.1	2.8	110.4	65.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.1	41.0	5.6	126.7	76.4		100.4	41.1	2.8	110.4	65.5	8.4
LOS	F	D	A	F	E		F	D	A	F	E	A
Approach Delay		47.1			90.1			51.6			58.4	
Approach LOS		D			F			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 58.3		Intersection LOS: E	
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	392	278	180	352	129	361	1163	110	64	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	603	462	178	354	130	355	1371	554	82	779	313
Arrive On Green	0.16	0.32	0.32	0.11	0.27	0.26	0.22	0.39	0.39	0.05	0.22	0.22
Sat Flow, veh/h	1641	1870	1434	1641	1298	476	1641	3554	1435	1641	3554	1430
Grp Volume(v), veh/h	253	392	278	180	0	481	361	1163	110	64	721	168
Grp Sat Flow(s),veh/h/ln	1641	1870	1434	1641	0	1774	1641	1777	1435	1641	1777	1430
Q Serve(g_s), s	18.4	21.6	10.4	13.0	0.0	32.5	26.0	35.9	6.1	4.6	23.8	8.3
Cycle Q Clear(g_c), s	18.4	21.6	10.4	13.0	0.0	32.5	26.0	35.9	6.1	4.6	23.8	8.3
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	603	462	178	0	483	355	1371	554	82	779	313
V/C Ratio(X)	0.97	0.65	0.60	1.01	0.00	1.00	1.02	0.85	0.20	0.78	0.93	0.54
Avail Cap(c_a), veh/h	260	603	462	178	0	483	355	1371	554	82	779	313
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	34.8	9.7	53.5	0.0	43.8	47.0	33.6	24.5	56.3	45.9	18.6
Incr Delay (d2), s/veh	48.4	2.5	2.2	70.9	0.0	39.6	51.7	5.2	0.2	37.1	16.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	9.6	6.0	8.6	0.0	18.7	15.1	15.2	2.0	2.7	11.8	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.7	37.3	11.9	124.4	0.0	83.5	98.7	38.8	24.7	93.5	62.8	20.4
LnGrp LOS	F	D	B	F	A	F	F	D	C	F	E	C
Approach Vol, veh/h		923			661			1634			953	
Approach Delay, s/veh		46.5			94.6			51.1			57.4	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	50.3	17.0	42.7	30.0	30.3	23.0	36.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	44.3	11.0	36.7	24.0	24.3	17.0	30.7
Max Q Clear Time (g_c+I1), s	6.6	37.9	15.0	23.6	28.0	25.8	20.4	34.5
Green Ext Time (p_c), s	0.0	3.2	0.0	2.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	58.4
HCM 6th LOS	E

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	446	59	41	496	103	70
Future Volume (vph)	446	59	41	496	103	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	64	45	539	112	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	64	45	539	112	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

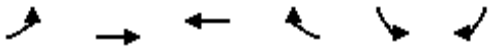
Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	59	41	496	103	70
Future Vol, veh/h	446	59	41	496	103	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	485	64	45	539	112	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	549	0	1114	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	629	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1021	-	230	582
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	531	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1021	-	220	582
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	27
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	220	582	-	-	1021	-
HCM Lane V/C Ratio	0.509	0.131	-	-	0.044	-
HCM Control Delay (s)	37.2	12.1	-	-	8.7	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	2.6	0.4	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	291	273	49	29	153
Future Volume (vph)	169	291	273	49	29	153
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980		0.887	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1825	0	1510	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1825	0	1510	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	316	297	53	32	166
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	500	350	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	169	291	273	49	29	153
Future Vol, veh/h	169	291	273	49	29	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	184	316	297	53	32	166

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	350	0	-	0	1008	324
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	684	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1209	-	-	-	267	717
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	501	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1209	-	-	-	218	717
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	501	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1209	-	-	-	525
HCM Lane V/C Ratio	0.152	-	-	-	0.377
HCM Control Delay (s)	8.5	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	1.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	376	1406	29	89	1016
Future Volume (vph)	2	376	1406	29	89	1016
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	409	1528	32	97	1104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	409	1528	32	97	1104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	18.8

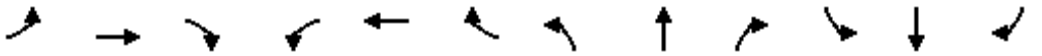
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	376	1406	29	89	1016
Future Vol, veh/h	2	376	1406	29	89	1016
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None		None		None
Storage Length	-	-	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	409	1528	32	97	1104

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2274	764	0	0	1560	0
Stage 1	1528	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	34	~ 346	-	-	420	-
Stage 1	165	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	~ 346	-	-	420	-
Mov Cap-2 Maneuver	26	-	-	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	331	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	141	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	346	420	-
HCM Lane V/C Ratio	-	-	1.181	0.23	-
HCM Control Delay (s)	-	-	141	16.1	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	16.9	0.9	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

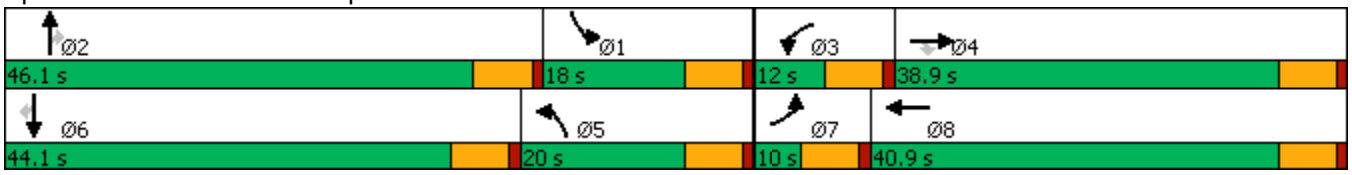


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	636	107	72	957	75	127	225	63	61	189	70
Future Volume (vph)	80	636	107	72	957	75	127	225	63	61	189	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3491	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3491	0	1630	1863	1432	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142		7				142			142
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	691	116	78	1040	82	138	245	68	66	205	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	691	116	78	1122	0	138	245	68	66	205	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	10.0	38.9	38.9	12.0	40.9		20.0	46.1	46.1	18.0	44.1	44.1
Total Split (%)	8.7%	33.8%	33.8%	10.4%	35.6%		17.4%	40.1%	40.1%	15.7%	38.3%	38.3%
Maximum Green (s)	4.0	32.9	32.9	6.0	34.9		14.0	40.1	40.1	12.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	6.1	37.9	37.9	8.1	37.1		13.9	23.7	23.7	12.9	19.9	19.9
Actuated g/C Ratio	0.07	0.41	0.41	0.09	0.40		0.15	0.25	0.25	0.14	0.21	0.21
v/c Ratio	0.82	0.48	0.18	0.55	0.81		0.57	0.52	0.14	0.29	0.52	0.18
Control Delay	96.3	25.0	3.5	60.3	32.1		49.0	35.7	0.7	41.3	36.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.3	25.0	3.5	60.3	32.1		49.0	35.7	0.7	41.3	36.7	1.0
LOS	F	C	A	E	C		D	D	A	D	D	A
Approach Delay		29.1			34.0			34.5			29.7	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 93.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 32.0		Intersection LOS: C	
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

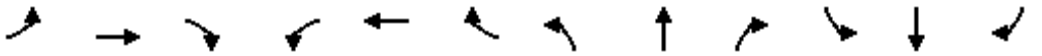
Splits and Phases: 10: Laspina St & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	636	107	72	957	75	127	225	63	61	189	70
Future Volume (veh/h)	80	636	107	72	957	75	127	225	63	61	189	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	87	691	116	78	1040	82	138	245	68	66	205	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	1336	533	139	1270	100	212	401	306	189	375	287
Arrive On Green	0.08	0.38	0.38	0.08	0.38	0.36	0.13	0.21	0.21	0.12	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	3328	262	1641	1870	1429	1641	1870	1429
Grp Volume(v), veh/h	87	691	116	78	555	567	138	245	68	66	205	76
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1814	1641	1870	1429	1641	1870	1429
Q Serve(g_s), s	3.9	11.5	2.3	3.5	21.4	21.5	6.1	9.0	2.1	2.8	7.5	2.4
Cycle Q Clear(g_c), s	3.9	11.5	2.3	3.5	21.4	21.5	6.1	9.0	2.1	2.8	7.5	2.4
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	129	1336	533	139	678	692	212	401	306	189	375	287
V/C Ratio(X)	0.67	0.52	0.22	0.56	0.82	0.82	0.65	0.61	0.22	0.35	0.55	0.27
Avail Cap(c_a), veh/h	129	1628	650	172	860	878	344	1033	790	301	984	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	18.4	4.7	33.5	21.2	21.3	31.6	27.1	11.8	31.1	27.3	12.8
Incr Delay (d2), s/veh	12.9	0.3	0.2	3.5	5.0	4.9	3.4	1.5	0.4	1.1	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	4.0	1.1	1.4	8.3	8.5	2.4	3.7	0.9	1.1	3.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	18.7	4.9	37.1	26.2	26.3	34.9	28.6	12.2	32.2	28.6	13.2
LnGrp LOS	D	B	A	D	C	C	C	C	B	C	C	B
Approach Vol, veh/h		894			1200			451			347	
Approach Delay, s/veh		19.7			26.9			28.0			25.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	20.3	10.4	32.6	13.8	19.3	10.0	33.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	40.1	6.0	32.9	14.0	38.1	4.0	34.9
Max Q Clear Time (g_c+I1), s	4.8	11.0	5.5	13.5	8.1	9.5	5.9	23.5
Green Ext Time (p_c), s	0.1	1.1	0.0	3.3	0.2	1.0	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

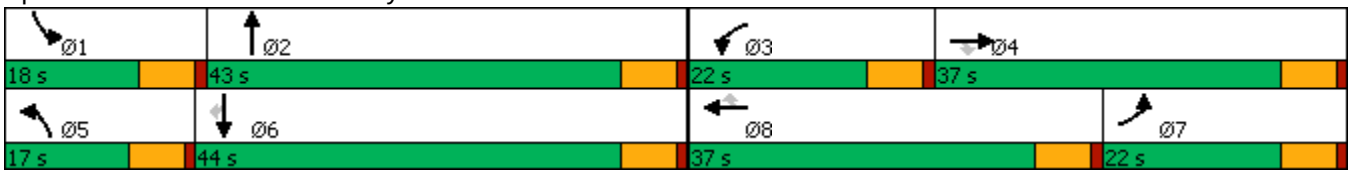


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	550	131	128	702	328	220	898	106	185	494	235
Future Volume (vph)	313	550	131	128	702	328	220	898	106	185	494	235
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			211		11				255
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	598	142	139	763	357	239	976	115	201	537	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	598	142	139	763	357	239	1091	0	201	537	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	37.0	37.0	22.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	30.8%	30.8%	18.3%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	31.0	31.0	16.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.0	33.4	33.4	15.9	31.2	31.2	13.0	38.9		14.0	39.9	39.9
Actuated g/C Ratio	0.15	0.28	0.28	0.13	0.26	0.26	0.11	0.33		0.12	0.34	0.34
v/c Ratio	1.37	0.60	0.28	0.64	0.82	0.67	1.34	0.95		1.04	0.85	0.39
Control Delay	229.0	39.9	7.0	62.2	48.8	22.1	225.3	55.7		127.1	51.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	229.0	39.9	7.0	62.2	48.8	22.1	225.3	55.7		127.1	51.4	5.4
LOS	F	D	A	E	D	C	F	E		F	D	A
Approach Delay		95.1			42.7			86.2			54.9	
Approach LOS		F			D			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.2			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.37			
Intersection Signal Delay: 69.8		Intersection LOS: E	
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			

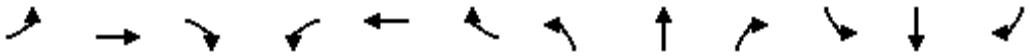
Splits and Phases: 11: Mooney Blvd & Tulare Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	550	131	128	702	328	220	898	106	185	494	235
Future Volume (veh/h)	313	550	131	128	702	328	220	898	106	185	494	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	340	598	142	139	763	357	239	976	115	201	537	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	1058	421	190	925	373	182	1055	124	196	635	487
Arrive On Green	0.15	0.30	0.30	0.12	0.26	0.26	0.11	0.33	0.31	0.12	0.34	0.34
Sat Flow, veh/h	1641	3554	1415	1641	3554	1432	1641	3190	376	1641	1870	1434
Grp Volume(v), veh/h	340	598	142	139	763	357	239	543	548	201	537	255
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1432	1641	1777	1789	1641	1870	1434
Q Serve(g_s), s	18.0	16.7	9.2	9.6	23.7	20.2	13.0	34.6	34.7	14.0	31.2	10.3
Cycle Q Clear(g_c), s	18.0	16.7	9.2	9.6	23.7	20.2	13.0	34.6	34.7	14.0	31.2	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	251	1058	421	190	925	373	182	588	592	196	635	487
V/C Ratio(X)	1.35	0.57	0.34	0.73	0.82	0.96	1.32	0.92	0.93	1.03	0.85	0.52
Avail Cap(c_a), veh/h	251	1058	421	251	999	402	182	590	594	196	637	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	34.8	32.2	50.1	40.9	21.0	52.2	37.9	38.1	51.7	35.9	11.7
Incr Delay (d2), s/veh	182.2	0.7	0.5	7.2	5.4	33.0	175.5	20.5	20.5	71.7	10.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	6.9	3.0	4.1	10.5	9.5	14.0	17.3	17.5	9.4	15.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	232.0	35.5	32.7	57.3	46.3	54.0	227.8	58.3	58.6	123.4	46.2	12.7
LnGrp LOS	F	D	C	E	D	D	F	E	E	F	D	B
Approach Vol, veh/h		1080			1259			1330			993	
Approach Delay, s/veh		97.0			49.7			88.9			53.2	
Approach LOS		F			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	42.9	17.6	38.9	17.0	43.9	22.0	34.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	16.0	31.0	11.0	38.0	16.0	31.0
Max Q Clear Time (g_c+I1), s	16.0	36.7	11.6	18.7	15.0	33.2	20.0	25.7
Green Ext Time (p_c), s	0.0	0.2	0.1	2.6	0.0	1.5	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	72.6
HCM 6th LOS	E



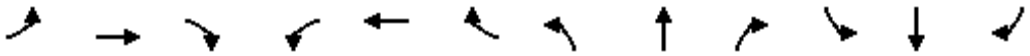
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Future Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.946			0.904	
Flt Protected		0.996			0.997			0.981			0.999	
Satd. Flow (prot)	0	1831	0	0	1857	0	0	1729	0	0	1682	0
Flt Permitted		0.996			0.997			0.981			0.999	
Satd. Flow (perm)	0	1831	0	0	1857	0	0	1729	0	0	1682	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	696	80	47	861	2	140	79	148	2	32	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	846	0	0	910	0	0	367	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	20.7
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	846	910	367	117
Demand Flow Rate, veh/h	863	928	375	120
Vehicles Circulating, veh/h	83	295	783	1069
Vehicles Exiting, veh/h	1106	863	163	154
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.2	31.1	17.5	12.0
Approach LOS	B	D	C	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	863	928	375	120
Cap Entry Lane, veh/h	1268	1021	621	464
Entry HV Adj Factor	0.980	0.980	0.980	0.978
Flow Entry, veh/h	846	910	367	117
Cap Entry, veh/h	1243	1001	608	454
V/C Ratio	0.681	0.909	0.604	0.259
Control Delay, s/veh	12.2	31.1	17.5	12.0
LOS	B	D	C	B
95th %tile Queue, veh	6	14	4	1

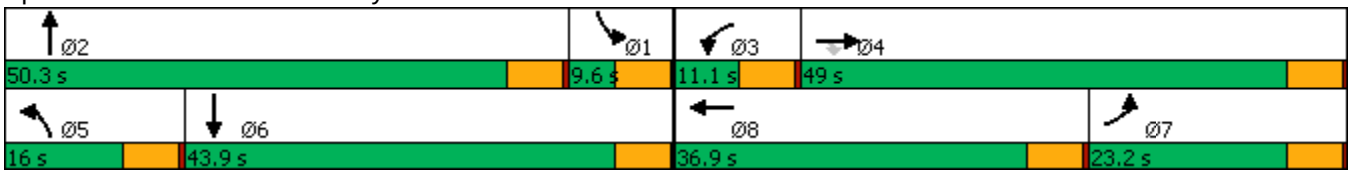


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	5055	0	1630	4951	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	5055	0	1630	4951	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218		1			5			29	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	218	37	192	3	249	1246	40	15	746	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	218	37	195	0	249	1286	0	15	872	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	23.2	49.0	49.0	11.1	36.9		16.0	50.3		9.6	43.9	
Total Split (%)	19.3%	40.8%	40.8%	9.3%	30.8%		13.3%	41.9%		8.0%	36.6%	
Maximum Green (s)	17.7	43.5	43.5	5.6	31.4		10.5	44.8		4.1	38.4	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	18.1	33.9	33.9	7.3	17.7		12.4	38.0		5.8	24.7	
Actuated g/C Ratio	0.20	0.38	0.38	0.08	0.20		0.14	0.42		0.06	0.28	
v/c Ratio	0.67	0.40	0.32	0.28	0.53		1.10	0.60		0.14	0.63	
Control Delay	47.8	25.0	4.8	51.1	38.6		130.5	22.9		50.9	29.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	47.8	25.0	4.8	51.1	38.6		130.5	22.9		50.9	29.8	
LOS	D	C	A	D	D		F	C		D	C	
Approach Delay		25.9			40.6			40.4			30.1	
Approach LOS		C			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 89.5			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 34.6		Intersection LOS: C	
Intersection Capacity Utilization 69.2%		ICU Level of Service C	
Analysis Period (min) 15			

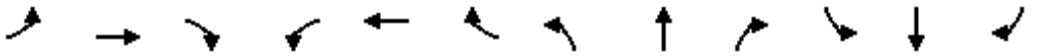
Splits and Phases: 1: Mooney Blvd & Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	218	37	192	3	249	1246	40	15	746	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	577	442	80	328	5	262	1777	57	131	1184	198
Arrive On Green	0.18	0.31	0.31	0.05	0.18	0.16	0.16	0.35	0.33	0.08	0.27	0.25
Sat Flow, veh/h	1641	1870	1433	1641	1836	29	1641	5076	163	1641	4381	732
Grp Volume(v), veh/h	222	285	218	37	0	195	249	835	451	15	578	294
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1864	1641	1702	1835	1641	1702	1709
Q Serve(g_s), s	9.7	9.3	9.3	1.6	0.0	7.2	11.3	15.9	15.9	0.6	11.2	11.5
Cycle Q Clear(g_c), s	9.7	9.3	9.3	1.6	0.0	7.2	11.3	15.9	15.9	0.6	11.2	11.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.09	1.00		0.43
Lane Grp Cap(c), veh/h	293	577	442	80	0	333	262	1192	643	131	920	462
V/C Ratio(X)	0.76	0.49	0.49	0.46	0.00	0.59	0.95	0.70	0.70	0.11	0.63	0.64
Avail Cap(c_a), veh/h	419	1120	858	155	0	816	262	2097	1131	131	1807	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.3	21.2	21.2	34.8	0.0	28.3	31.3	21.0	21.1	32.1	24.1	24.5
Incr Delay (d2), s/veh	4.9	0.7	0.9	4.2	0.0	1.6	42.1	0.8	1.4	0.4	0.7	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.6	2.8	0.7	0.0	3.0	7.0	5.4	6.0	0.2	4.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	21.8	22.0	38.9	0.0	29.9	73.4	21.8	22.5	32.5	24.8	25.9
LnGrp LOS	C	C	C	D	A	C	E	C	C	C	C	C
Approach Vol, veh/h		725			232			1535			887	
Approach Delay, s/veh		25.7			31.4			30.4			25.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	30.3	7.7	27.2	16.0	24.3	17.4	17.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	4.5	44.8	5.6	43.5	10.5	38.4	17.7	31.4
Max Q Clear Time (g_c+I1), s	2.6	17.9	3.6	11.3	13.3	13.5	11.7	9.2
Green Ext Time (p_c), s	0.0	5.9	0.0	1.9	0.0	3.7	0.4	0.6

Intersection Summary	
HCM 6th Ctrl Delay	28.1
HCM 6th LOS	C

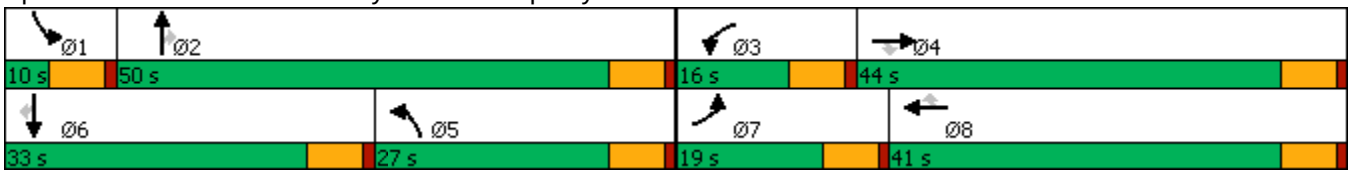


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor			0.98			0.98			0.98			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	5085	1458	3162	5085	1458	3162	5085	1458	3162	5085	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	5085	1432	3162	5085	1429	3162	5085	1429	3162	5085	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278			191			136			168
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	392	278	180	352	129	361	1163	110	64	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	392	278	180	352	129	361	1163	110	64	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7	32.7	10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	19.0	44.0	44.0	16.0	41.0	41.0	27.0	50.0	50.0	10.0	33.0	33.0
Total Split (%)	15.8%	36.7%	36.7%	13.3%	34.2%	34.2%	22.5%	41.7%	41.7%	8.3%	27.5%	27.5%
Maximum Green (s)	13.0	38.0	38.0	10.0	35.0	35.0	21.0	44.0	44.0	4.0	27.0	27.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7	19.7		18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	13.8	18.6	18.6	11.6	16.4	14.3	17.3	34.5	34.5	6.3	20.8	20.8
Actuated g/C Ratio	0.16	0.22	0.22	0.14	0.19	0.17	0.20	0.41	0.41	0.07	0.24	0.24
v/c Ratio	0.50	0.35	0.52	0.42	0.36	0.32	0.56	0.56	0.17	0.28	0.58	0.35
Control Delay	39.5	29.2	7.6	41.1	31.2	3.0	36.4	22.1	2.9	46.8	31.6	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	29.2	7.6	41.1	31.2	3.0	36.4	22.1	2.9	46.8	31.6	7.6
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		25.5			28.4			24.0			28.4	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 85			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	392	278	180	352	129	361	1163	110	64	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	1194	334	357	1058	254	572	1795	504	223	1236	346
Arrive On Green	0.14	0.23	0.23	0.11	0.21	0.18	0.18	0.35	0.35	0.07	0.24	0.24
Sat Flow, veh/h	3183	5106	1430	3183	5106	1427	3183	5106	1434	3183	5106	1431
Grp Volume(v), veh/h	253	392	278	180	352	129	361	1163	110	64	721	168
Grp Sat Flow(s),veh/h/ln	1591	1702	1430	1591	1702	1427	1591	1702	1434	1591	1702	1431
Q Serve(g_s), s	5.1	4.4	6.8	3.7	4.0	5.6	7.2	13.2	3.7	1.3	8.6	4.1
Cycle Q Clear(g_c), s	5.1	4.4	6.8	3.7	4.0	5.6	7.2	13.2	3.7	1.3	8.6	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	441	1194	334	357	1058	254	572	1795	504	223	1236	346
V/C Ratio(X)	0.57	0.33	0.83	0.50	0.33	0.51	0.63	0.65	0.22	0.29	0.58	0.49
Avail Cap(c_a), veh/h	694	2968	831	555	2745	726	1064	3413	959	277	2152	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	21.9	7.3	28.8	23.2	25.6	26.1	18.7	15.7	30.4	23.0	7.7
Incr Delay (d2), s/veh	1.2	0.2	5.4	1.1	0.2	1.6	1.2	0.4	0.2	0.7	0.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.5	3.7	1.3	1.4	1.8	2.5	4.3	1.0	0.5	3.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	22.0	12.6	29.9	23.4	27.1	27.3	19.1	15.9	31.1	23.5	8.8
LnGrp LOS	C	C	B	C	C	C	C	B	B	C	C	A
Approach Vol, veh/h		923			661			1634			953	
Approach Delay, s/veh		21.1			25.9			20.7			21.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	28.2	11.7	20.1	16.4	20.7	13.5	18.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	44.0	10.0	38.0	21.0	27.0	13.0	35.0
Max Q Clear Time (g_c+I1), s	3.3	15.2	5.7	8.8	9.2	10.6	7.1	7.6
Green Ext Time (p_c), s	0.0	6.4	0.2	2.9	1.2	3.6	0.5	2.0

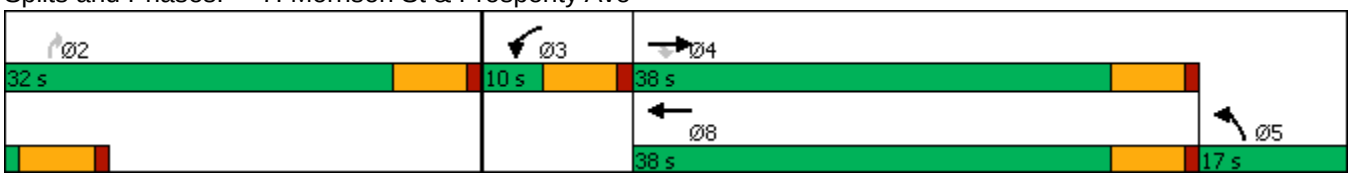
Intersection Summary	
HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	446	59	41	496	103	70
Future Volume (vph)	446	59	41	496	103	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		64				76
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	64	45	539	112	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	64	45	539	112	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	5	
Permitted Phases		4				2
Detector Phase	4	4	3	8	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	10.0	24.0	10.0	24.0
Total Split (s)	38.0	38.0	10.0	38.0	17.0	32.0
Total Split (%)	42.2%	42.2%	11.1%	42.2%	18.9%	35.6%
Maximum Green (s)	32.0	32.0	4.0	32.0	11.0	26.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	Min
Walk Time (s)	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0		11.0		11.0
Pedestrian Calls (#/hr)	0	0		0		0
Act Effct Green (s)	18.2	18.2	4.3	23.2	9.1	9.0
Actuated g/C Ratio	0.40	0.40	0.10	0.51	0.20	0.20
v/c Ratio	0.65	0.10	0.29	0.56	0.34	0.22
Control Delay	16.7	3.8	29.6	9.5	22.0	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	3.8	29.6	9.5	22.0	7.8
LOS	B	A	C	A	C	A
Approach Delay	15.2			11.1	16.2	
Approach LOS	B			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 45.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Morrison St & Prosperity Ave



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	446	59	41	496	103	70
Future Volume (veh/h)	446	59	41	496	103	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1723	1723	1870	1723	1723
Adj Flow Rate, veh/h	485	64	45	539	112	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	641	500	66	1032	181	161
Arrive On Green	0.34	0.34	0.04	0.55	0.11	0.11
Sat Flow, veh/h	1870	1460	1641	1870	1641	1460
Grp Volume(v), veh/h	485	64	45	539	112	76
Grp Sat Flow(s),veh/h/ln	1870	1460	1641	1870	1641	1460
Q Serve(g_s), s	8.2	1.1	1.0	6.4	2.3	1.7
Cycle Q Clear(g_c), s	8.2	1.1	1.0	6.4	2.3	1.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	641	500	66	1032	181	161
V/C Ratio(X)	0.76	0.13	0.68	0.52	0.62	0.47
Avail Cap(c_a), veh/h	1686	1316	185	1686	508	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.4	8.0	16.8	5.0	15.1	14.8
Incr Delay (d2), s/veh	1.9	0.1	11.5	0.4	3.5	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.2	0.5	0.4	0.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.2	8.1	28.3	5.4	18.5	17.0
LnGrp LOS	B	A	C	A	B	B
Approach Vol, veh/h	549			584	188	
Approach Delay, s/veh	11.7			7.2	17.9	
Approach LOS	B			A	B	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	9.9	7.4	18.2	25.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	4.0	32.0	32.0
Max Q Clear Time (g_c+I1), s	4.3	3.0	10.2	8.4
Green Ext Time (p_c), s	0.3	0.0	2.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	10.6
HCM 6th LOS	B

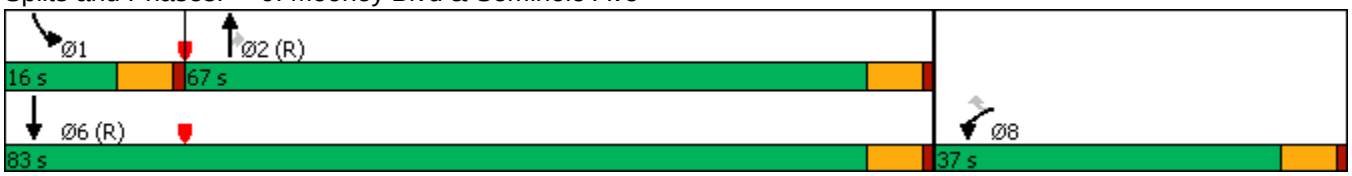


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	376	1406	29	89	1016
Future Volume (vph)	2	376	1406	29	89	1016
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	1	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1630	1458	3539	1458	1630	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		171		28		
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	409	1528	32	97	1104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	409	1528	32	97	1104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	10.0	24.0
Total Split (s)	37.0	37.0	67.0	67.0	16.0	83.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	30.8%	30.8%	55.8%	55.8%	13.3%	69.2%
Maximum Green (s)	31.0	31.0	61.0	61.0	10.0	77.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	6.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	25.5	27.5	68.4	68.4	12.1	84.5
Actuated g/C Ratio	0.21	0.23	0.57	0.57	0.10	0.70
v/c Ratio	0.01	0.88	0.76	0.04	0.59	0.44
Control Delay	33.5	45.6	24.0	5.7	66.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	45.6	24.0	5.7	66.8	9.0
LOS	C	D	C	A	E	A
Approach Delay	45.6		23.6			13.7
Approach LOS	D		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Mooney Blvd & Seminole Ave

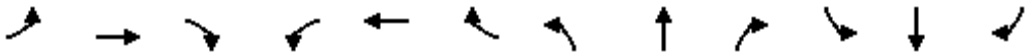




Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	376	1406	29	89	1016
Future Volume (veh/h)	2	376	1406	29	89	1016
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1723	1723	1870	1723	1723	1870
Adj Flow Rate, veh/h	2	409	1528	32	97	1104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	424	401	1909	784	144	2340
Arrive On Green	0.26	0.28	0.54	0.54	0.09	0.66
Sat Flow, veh/h	1641	1460	3647	1460	1641	3647
Grp Volume(v), veh/h	2	409	1528	32	97	1104
Grp Sat Flow(s),veh/h/ln	1641	1460	1777	1460	1641	1777
Q Serve(g_s), s	0.1	33.0	41.9	1.2	6.9	18.5
Cycle Q Clear(g_c), s	0.1	33.0	41.9	1.2	6.9	18.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	424	401	1909	784	144	2340
V/C Ratio(X)	0.00	1.02	0.80	0.04	0.67	0.47
Avail Cap(c_a), veh/h	424	401	1909	784	164	2340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	0.82	0.82
Uniform Delay (d), s/veh	33.0	43.5	22.6	13.1	53.1	10.2
Incr Delay (d2), s/veh	0.0	49.7	0.3	0.0	7.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.7	15.4	0.4	3.0	6.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.0	93.2	22.9	13.2	60.2	10.7
LnGrp LOS	C	F	C	B	E	B
Approach Vol, veh/h	411		1560			1201
Approach Delay, s/veh	93.0		22.7			14.7
Approach LOS	F		C			B

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	14.6	68.4				83.0	37.0
Change Period (Y+Rc), s	6.0	6.0				6.0	6.0
Max Green Setting (Gmax), s	10.0	61.0				77.0	31.0
Max Q Clear Time (g_c+I1), s	8.9	43.9				20.5	35.0
Green Ext Time (p_c), s	0.0	7.4				5.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	28.8
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Future Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998	0.850					0.946			0.904	
Flt Protected		0.995			0.997			0.981			0.999	
Satd. Flow (prot)	0	1757	1385	0	1857	0	0	1729	0	0	1682	0
Flt Permitted		0.995			0.997			0.981			0.999	
Satd. Flow (perm)	0	1757	1385	0	1857	0	0	1729	0	0	1682	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	696	80	47	861	2	140	79	148	2	32	83
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	774	72	0	910	0	0	367	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	19.6
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	2	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	846	910	367	117
Demand Flow Rate, veh/h	863	928	375	120
Vehicles Circulating, veh/h	83	295	783	1069
Vehicles Exiting, veh/h	1106	863	163	154
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.1	31.1	17.5	12.0
Approach LOS	A	D	C	B

Lane	Left	Right	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized					
Lane Util	0.905	0.095	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976	4.976
Entry Flow, veh/h	781	82	928	375	120
Cap Entry Lane, veh/h	1317	1317	1021	621	464
Entry HV Adj Factor	0.981	0.976	0.980	0.980	0.978
Flow Entry, veh/h	766	80	910	367	117
Cap Entry, veh/h	1292	1285	1001	608	454
V/C Ratio	0.593	0.062	0.909	0.604	0.259
Control Delay, s/veh	9.7	3.3	31.1	17.5	12.0
LOS	A	A	D	C	B
95th %tile Queue, veh	4	0	14	4	1

Turning Movement Count Report AM

Location ID: 1
North/South: Mooney Blvd
East/West: Cartmill Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	11	39	0	0	9	1	6	37	11	3	8	18	143
6:15	10	41	0	1	6	1	2	50	13	5	9	11	149
6:30	8	59	0	1	10	1	4	101	11	10	22	19	246
6:45	18	60	2	1	17	3	4	117	9	9	20	15	275
7:00	15	79	0	0	8	2	4	119	19	24	18	13	301
7:15	16	71	0	0	23	3	1	159	29	28	29	25	384
7:30	20	127	6	1	35	9	13	192	40	33	43	29	548
7:45	17	118	2	1	38	6	4	189	44	32	64	53	568
Total Volume:	115	594	10	5	146	26	38	964	176	144	213	183	2614
Approach %	16%	83%	1%	3%	82%	15%	3%	82%	15%	27%	39%	34%	
Peak Hr Begin:	7:00												
PHV	68	395	8	2	104	20	22	659	132	117	154	120	1801
PHF	0.770			0.700			0.830			0.656			

Turning Movement Count Report PM

Location ID: 1
North/South: Mooney Blvd
East/West: Cartmill Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	45	159	2	4	31	11	3	154	27	25	36	34	531
16:15	41	190	2	4	30	6	4	169	19	36	30	31	562
16:30	37	180	3	1	33	7	4	150	19	26	26	23	509
16:45	34	199	0	1	23	8	6	163	24	42	26	42	568
17:00	44	207	5	1	31	0	6	176	20	18	25	35	568
17:15	39	221	0	1	32	4	3	174	22	33	35	46	610
17:30	51	230	4	1	22	4	2	145	18	17	21	41	556
17:45	36	158	0	1	27	6	2	120	19	22	15	35	441
Total Volume:	327	1544	16	14	229	46	30	1251	168	219	214	287	4345
Approach %	17%	82%	1%	5%	79%	16%	2%	86%	12%	30%	30%	40%	
Peak Hr Begin:	16:45												
PHV	168	857	9	4	108	16	17	658	84	110	107	164	2302
PHF	0.907			0.865			0.939			0.836			

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 1
North/South: Mooney Blvd
East/West: Cartmill Ave

Date: 01/16/24
City: Tulare, CA

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 2
North/South: Prosperity Ave
East/West: SR 99 SB Offramp

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	43	0	3	0	12	0	36	0	0	0	0	94
6:15	0	39	0	9	0	15	0	23	0	0	0	0	86
6:30	0	39	0	15	0	14	0	33	0	0	0	0	101
6:45	0	53	0	20	0	11	0	45	0	0	0	0	129
7:00	0	51	0	25	0	11	0	50	0	0	0	0	137
7:15	0	52	0	19	0	26	0	43	0	0	0	0	140
7:30	0	90	0	22	0	22	0	83	0	0	0	0	217
7:45	0	113	0	37	0	26	0	114	0	0	0	0	290
Total Volume:	0	480	0	150	0	137	0	427	0	0	0	0	1194
Approach %	0%	100%	0%	52%	0%	48%	0%	100%	0%	0%	0%	0%	
Peak Hr Begin:	7:00												
PHV	0	306	0	103	0	85	0	290	0	0	0	0	784
PHF	0.677			0.746			0.636			0.000			

Turning Movement Count Report PM

Location ID: 2
North/South: Prosperity Ave
East/West: SR 99 SB Offramp

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	144	0	24	0	44	0	151	0	0	0	0	363
16:15	0	120	0	24	0	40	0	131	0	0	0	0	315
16:30	0	145	0	18	0	48	0	128	0	0	0	0	339
16:45	0	135	0	19	0	41	0	145	0	0	0	0	340
17:00	0	141	0	14	0	39	0	152	0	0	0	0	346
17:15	0	147	0	25	0	60	0	140	0	0	0	0	372
17:30	0	154	0	17	0	32	0	155	0	0	0	0	358
17:45	0	156	1	24	0	33	0	143	0	0	0	0	357
Total Volume:	0	1142	1	165	0	337	0	1145	0	0	0	0	2790
Approach %	0%	100%	0%	33%	0%	67%	0%	100%	0%	0%	0%	0%	
Peak Hr Begin:	17:00												
PHV	0	598	1	80	0	164	0	590	0	0	0	0	1433
PHF	0.954			0.718			0.952			0.000			

Pedestrian/Bicycle Count Report

Location ID: 2
North/South: Prosperity Ave
East/West: SR 99 SB Offramp

Date: 01/16/24
City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	2	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 3
North/South: Blackstone St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	16	39	29	0	44	16	5	0	0	1	0	150
6:15	1	22	36	18	0	54	34	2	0	0	1	0	168
6:30	1	17	35	30	0	47	37	5	0	0	1	0	173
6:45	0	21	50	43	0	98	34	4	0	0	2	0	252
7:00	2	24	41	40	3	63	44	10	0	0	2	0	229
7:15	0	20	61	46	2	96	55	4	0	0	1	0	285
7:30	0	31	83	73	2	102	59	8	0	1	1	0	360
7:45	0	31	104	110	2	136	97	11	0	1	3	0	495
Total Volume:	4	182	449	389	9	640	376	49	0	2	12	0	2112
Approach %	1%	29%	71%	37%	1%	62%	88%	12%	0%	14%	86%	0%	
Peak Hr Begin:	7:00												
PHV	2	106	289	269	9	397	255	33	0	2	7	0	1369
PHF	0.735			0.680			0.667			0.563			

Turning Movement Count Report PM

Location ID: 3
North/South: Blackstone St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	1	43	152	138	3	122	128	16	0	1	1	0	605
16:15	0	34	150	134	5	149	116	12	0	1	5	0	606
16:30	0	38	177	147	6	146	136	10	0	1	4	0	665
16:45	0	44	151	152	2	131	119	10	0	1	2	1	613
17:00	0	31	161	135	6	137	141	19	0	2	5	0	637
17:15	0	31	160	132	7	167	107	8	0	1	5	1	619
17:30	0	36	171	129	8	152	71	11	0	1	5	0	584
17:45	0	38	144	131	6	125	76	16	0	2	2	1	541
Total Volume:	1	295	1266	1098	43	1129	894	102	0	10	29	3	4870
Approach %	0%	19%	81%	48%	2%	50%	90%	10%	0%	24%	69%	7%	
Peak Hr Begin:	16:30												
PHV	0	144	649	566	21	581	503	47	0	5	16	2	2534
PHF	0.922			0.954			0.859			0.821			

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 3
North/South: Blackstone St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
6:00	0	0	0	0	0	0	1	0
6:15	0	0	0	0	0	0	0	1
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	1
7:00	1	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	1
7:45	1	0	0	0	0	0	0	1

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
16:00	0	0	0	0	0	0	2	0
16:15	0	1	0	0	0	0	1	1
16:30	0	1	0	0	0	0	0	0
16:45	2	1	0	0	0	0	2	0
17:00	3	1	0	0	1	0	1	1
17:15	0	0	0	0	0	0	1	0
17:30	0	0	0	0	1	0	1	0
17:45	1	0	0	0	0	0	3	0

Turning Movement Count Report AM

Location ID: 4
North/South: Hillman St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	27	9	8	6	42	2	15	14	22	8	30	11	194
6:15	34	3	4	10	40	2	7	17	19	13	29	16	194
6:30	31	5	8	10	46	7	11	34	13	10	33	26	234
6:45	42	8	9	11	80	5	15	45	33	14	32	26	320
7:00	38	4	8	20	75	5	10	37	18	7	37	39	298
7:15	60	9	14	18	82	6	12	52	19	21	55	38	386
7:30	79	11	28	30	104	12	14	86	36	17	56	56	529
7:45	107	7	27	26	113	11	24	86	50	13	100	87	651
Total Volume:	418	56	106	131	582	50	108	371	210	103	372	299	2806
Approach %	72%	10%	18%	17%	76%	7%	16%	54%	30%	13%	48%	39%	
Peak Hr Begin:	7:00												
PHV	284	31	77	94	374	34	60	261	123	58	248	220	1864
PHF	0.695			0.837			0.694			0.658			

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 4
North/South: Hillman St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	95	26	68	60	160	18	32	93	42	15	160	95	864
16:15	80	19	58	59	183	23	38	73	38	19	146	102	838
16:30	123	27	47	51	172	15	43	107	45	30	179	106	945
16:45	101	24	67	41	146	14	40	86	35	21	126	104	805
17:00	114	33	69	36	160	14	32	78	43	27	159	116	881
17:15	105	37	82	48	183	22	38	68	43	28	149	101	904
17:30	94	20	58	63	180	26	30	73	44	19	152	92	851
17:45	89	29	47	49	147	23	20	54	36	18	120	72	704
Total Volume:	801	215	496	407	1331	155	273	632	326	177	1191	788	6792
Approach %	53%	14%	33%	22%	70%	8%	22%	51%	26%	8%	55%	37%	
Peak Hr Begin:	16:30												
PHV	443	121	265	176	661	65	153	339	166	106	613	427	3535
PHF	0.925			0.891			0.844			0.910			

Pedestrian/Bicycle Count Report

Location ID: 4
North/South: Hillman St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	1	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	1	0	0
7:00	0	1	0	0	0	0	0	0
7:15	0	1	0	0	0	0	0	0
7:30	1	0	0	0	0	0	0	0
7:45	0	1	3	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	2	0	0	0	1	0	0	0
16:15	0	1	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	1	4	0
17:00	0	0	2	0	1	0	1	0
17:15	1	0	1	0	0	0	1	0
17:30	1	0	0	0	0	0	0	0
17:45	3	0	0	0	0	0	2	0

Turning Movement Count Report AM

Location ID: 5
North/South: Laspina St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	6	1	0	1	24	3	4	5	14	10	32	1	101
6:15	5	8	5	0	29	3	8	2	10	11	25	4	110
6:30	12	9	3	3	38	1	9	9	12	14	35	1	146
6:45	18	18	3	4	48	6	10	12	20	10	44	4	197
7:00	20	17	10	3	36	5	15	16	22	10	32	6	192
7:15	18	29	9	9	49	10	17	26	27	11	41	8	254
7:30	27	42	19	12	84	10	16	57	34	22	72	8	403
7:45	30	74	15	19	100	12	18	74	35	17	72	9	475

Total Volume:	136	198	64	51	408	50	97	201	174	105	353	41	1878
Approach %	34%	50%	16%	10%	80%	10%	21%	43%	37%	21%	71%	8%	

Peak Hr Begin:	7:00												
PHV	95	162	53	43	269	37	66	173	118	60	217	31	1324
PHF	0.651			0.666			0.703			0.755			

Turning Movement Count Report PM

Location ID: 5
North/South: Laspina St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	15	60	40	9	165	17	25	37	62	64	152	25	671
16:15	18	55	27	11	132	23	31	39	57	79	151	26	649
16:30	15	54	33	15	134	16	28	35	47	75	168	27	647
16:45	15	51	31	8	156	15	27	45	56	67	130	23	624
17:00	20	45	33	12	142	14	27	44	51	54	167	24	633
17:15	23	62	24	12	104	24	22	34	57	71	149	35	617
17:30	13	45	18	5	133	10	22	45	51	76	144	31	593
17:45	17	27	24	11	146	10	19	35	53	53	109	17	521
Total Volume:	136	399	230	83	1112	129	201	314	434	539	1170	208	4955
Approach %	18%	52%	30%	6%	84%	10%	21%	33%	46%	28%	61%	11%	
Peak Hr Begin:	16:00												
PHV	63	220	131	43	587	71	111	156	222	285	601	101	2591
PHF	0.900			0.918			0.955			0.914			

Pedestrian/Bicycle Count Report

Location ID: 5
North/South: Laspina St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	1	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	2	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	2	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	3	0	1	0
16:15	0	0	0	0	2	0	1	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	1
17:00	0	0	0	0	1	1	2	1
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 6
North/South: Mooney Blvd
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	5	26	4	4	9	9	10	47	9	19	11	6	159
6:15	6	38	6	3	8	4	5	48	23	11	16	10	178
6:30	10	52	5	7	19	16	7	99	12	14	16	18	275
6:45	17	57	2	4	16	13	12	104	23	16	25	20	309
7:00	14	71	5	7	10	15	7	117	25	23	25	24	343
7:15	21	86	4	14	13	15	13	141	39	26	39	33	444
7:30	30	118	9	17	42	25	13	187	53	51	39	34	618
7:45	26	114	8	16	47	36	21	183	78	50	59	46	684
Total Volume:	129	562	43	72	164	133	88	926	262	210	230	191	3010
Approach %	18%	77%	6%	20%	44%	36%	7%	73%	21%	33%	36%	30%	
Peak Hr Begin:	7:00												
PHV	91	389	26	54	112	91	54	628	195	150	162	137	2089
PHF	0.806			0.649			0.777			0.724			

Turning Movement Count Report PM

Location ID: 6
North/South: Mooney Blvd
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	67	154	7	11	42	25	13	118	75	67	48	55	682
16:15	37	155	17	9	40	36	9	128	47	91	58	61	688
16:30	52	142	12	5	45	35	10	123	48	72	63	46	653
16:45	62	190	13	8	46	24	7	123	52	66	57	51	699
17:00	47	171	13	13	52	29	15	154	44	78	58	58	732
17:15	59	197	15	14	40	38	7	117	49	85	28	52	701
17:30	35	168	23	15	39	27	11	108	43	81	43	43	636
17:45	47	162	9	5	23	21	7	101	55	55	29	49	563
Total Volume:	406	1339	109	80	327	235	79	972	413	595	384	415	5354
Approach %	22%	72%	6%	12%	51%	37%	5%	66%	28%	43%	28%	30%	
Peak Hr Begin:	16:30												
PHV	220	700	53	40	183	126	39	517	193	301	206	207	2785
PHF	0.898			0.928			0.879			0.920			

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 6
North/South: Mooney Blvd
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	1	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	1	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	1	0	0	0	1	1	1	1
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 7
North/South: Morrison St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	0	0	0	19	2	2	0	2	3	19	0	47
6:15	0	0	0	0	16	1	2	0	2	3	27	0	51
6:30	0	0	0	0	31	1	7	0	9	0	34	0	82
6:45	0	0	0	0	34	4	5	0	0	0	40	0	83
7:00	0	0	0	0	22	2	6	0	1	2	38	0	71
7:15	0	0	0	0	39	9	5	0	4	0	48	0	105
7:30	0	0	0	0	66	2	15	0	9	0	57	0	149
7:45	0	0	0	0	103	11	15	0	8	2	86	0	225
Total Volume:	0	0	0	0	330	32	57	0	35	10	349	0	813
Approach %	0%	0%	0%	0%	91%	9%	62%	0%	38%	3%	97%	0%	
Peak Hr Begin:	7:00												
PHV	0	0	0	0	230	24	41	0	22	4	229	0	550
PHF	0.000			0.557			0.656			0.662			

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 7
North/South: Morrison St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	0	0	0	60	4	11	0	7	1	71	0	154
16:15	0	0	0	0	84	8	7	0	4	7	61	0	171
16:30	0	0	0	0	68	4	10	0	5	3	85	0	175
16:45	0	0	0	0	73	6	3	0	5	11	72	0	170
17:00	0	0	0	0	72	10	6	0	4	3	83	0	178
17:15	0	0	0	0	77	17	3	0	3	3	47	0	150
17:30	0	0	0	0	74	14	3	0	4	5	59	0	159
17:45	0	0	0	0	33	10	1	0	3	4	44	0	95
Total Volume:	0	0	0	0	541	73	44	0	35	37	522	0	1252
Approach %	0%	0%	0%	0%	88%	12%	56%	0%	44%	7%	93%	0%	
Peak Hr Begin:	16:15												
PHV	0	0	0	0	297	28	26	0	18	24	301	0	694
PHF	0.000			0.883			0.733			0.923			

Pedestrian/Bicycle Count Report

Location ID: 7
North/South: Morrison St
East/West: Prosperity Ave

Date: 01/16/24
City: Tulare, CA

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	1	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 10
North/South: Laspina St
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	6	9	2	0	72	2	3	13	9	5	77	7	205
6:15	15	9	8	1	62	2	13	13	6	4	79	3	215
6:30	12	20	6	2	87	3	16	21	10	5	114	3	299
6:45	20	17	4	4	108	6	14	25	14	5	70	8	295
7:00	11	26	9	4	106	6	11	22	21	8	76	8	308
7:15	15	35	14	13	106	10	11	39	27	8	73	4	355
7:30	18	49	16	10	148	9	23	61	28	24	96	14	496
7:45	23	72	17	11	187	14	15	94	46	23	116	21	639
Total Volume:	120	237	76	45	876	52	106	288	161	82	701	68	2812
Approach %	28%	55%	18%	5%	90%	5%	19%	52%	29%	10%	82%	8%	
Peak Hr Begin:	7:00												
PHV	67	182	56	38	547	39	60	216	122	63	361	47	1798
PHF	0.681			0.736			0.642			0.736			

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 10
North/South: Laspina St
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	17	96	27	18	135	25	20	78	24	46	148	39	673
16:15	26	108	32	14	115	24	16	61	21	36	128	30	611
16:30	23	83	33	16	119	20	17	58	26	41	166	23	625
16:45	27	94	27	10	149	17	13	75	29	37	176	24	678
17:00	12	92	30	12	134	17	18	72	28	39	184	38	676
17:15	27	101	22	21	122	22	21	65	22	68	165	30	686
17:30	27	98	32	16	121	33	21	62	21	42	140	27	640
17:45	16	77	27	16	122	24	10	53	25	31	108	21	530
Total Volume:	175	749	230	123	1017	182	136	524	196	340	1215	232	5119
Approach %	15%	65%	20%	9%	77%	14%	16%	61%	23%	19%	68%	13%	
Peak Hr Begin:	16:45												
PHV	93	385	111	59	526	89	73	274	100	186	665	119	2680
PHF	0.938			0.957			0.947			0.922			

Pedestrian/Bicycle Count Report

Location ID: 10
North/South: Laspina St
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
6:00	0	0	0	0	0	0	0	0
6:15	1	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	0	0	0
7:00	0	0	1	0	0	0	0	0
7:15	0	0	0	2	0	0	0	0
7:30	0	0	0	2	0	0	0	0
7:45	3	0	4	0	2	0	0	1

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
16:00	1	0	1	0	0	0	2	0
16:15	0	0	0	0	0	0	1	0
16:30	0	0	1	0	0	0	0	0
16:45	0	0	0	0	0	0	1	0
17:00	0	0	0	0	1	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 11
North/South: Mooney Blvd
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	8	36	11	19	50	9	8	30	10	10	60	13	264
6:15	8	39	20	21	52	9	8	28	12	9	84	22	312
6:30	22	41	16	23	55	15	14	66	13	9	108	33	415
6:45	23	41	19	21	83	21	6	80	12	1	54	35	396
7:00	16	48	21	19	82	13	6	90	17	9	66	43	430
7:15	27	66	32	51	74	11	13	133	30	9	66	30	542
7:30	45	70	33	69	117	14	20	150	30	29	70	58	705
7:45	50	106	50	50	115	29	20	154	52	30	106	53	815

Total Volume:	199	447	202	273	628	121	95	731	176	106	614	287	3879
Approach %	23%	53%	24%	27%	61%	12%	9%	73%	18%	11%	61%	29%	

Peak Hr Begin:	7:00												
PHV	138	290	136	189	388	67	59	527	129	77	308	184	2492
PHF	0.684			0.805			0.791			0.753			

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 11
North/South: Mooney Blvd
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	62	117	59	66	104	23	14	137	38	50	96	60	826
16:15	57	146	54	50	82	9	15	115	28	42	95	49	742
16:30	64	132	63	52	95	20	16	122	20	54	115	43	796
16:45	74	135	68	44	100	11	19	128	35	53	112	46	825
17:00	54	128	80	51	79	17	13	127	21	48	136	63	817
17:15	81	134	56	64	85	19	13	133	27	48	108	56	824
17:30	84	156	74	44	86	21	15	95	24	54	84	39	776
17:45	73	127	68	53	75	9	5	111	28	38	75	29	691

Total Volume:	549	1075	522	424	706	129	110	968	221	387	821	385	6297
Approach %	26%	50%	24%	34%	56%	10%	8%	75%	17%	24%	52%	24%	

Peak Hr Begin:	16:30												
PHV	273	529	267	211	359	67	61	510	103	203	471	208	3262
PHF	0.965			0.948			0.926			0.893			

Pedestrian/Bicycle Count Report

Location ID: 11
North/South: Mooney Blvd
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	1	0	1	0	0	1	0	0
7:00	0	0	0	0	0	0	0	0
7:15	1	0	1	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 12
North/South: Morrison St
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	2	1	0	1	69	0	4	1	7	4	72	3	164
6:15	0	1	0	0	65	0	8	4	6	4	101	1	190
6:30	0	1	0	4	78	0	6	6	6	8	126	3	238
6:45	4	1	0	0	100	1	4	2	7	2	83	2	206
7:00	2	0	0	0	98	2	11	5	12	5	80	4	219
7:15	1	7	0	0	101	4	19	4	16	8	102	2	264
7:30	2	1	0	0	131	7	21	20	29	13	111	7	342
7:45	4	7	0	0	135	12	29	13	19	35	138	5	397
Total Volume:	15	19	0	5	777	26	102	55	102	79	813	27	2020
Approach %	44%	56%	0%	1%	96%	3%	39%	21%	39%	9%	88%	3%	
Peak Hr Begin:	7:00												
PHV	9	15	0	0	465	25	80	42	76	61	431	18	1222
PHF	0.545			0.833			0.707			0.716			

Turning Movement Count Report PM

Location ID: 12
North/South: Morrison St
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	2	3	0	0	144	10	6	5	8	28	118	6	330
16:15	3	5	2	2	122	12	5	5	11	31	103	6	307
16:30	4	4	0	0	149	10	6	8	11	31	137	6	366
16:45	5	7	0	1	120	12	9	3	12	34	147	2	352
17:00	6	3	0	1	104	11	4	6	14	37	151	4	341
17:15	12	9	0	2	113	19	10	5	21	30	127	1	349
17:30	8	7	0	2	126	9	10	2	14	40	122	2	342
17:45	5	10	0	1	91	9	5	3	20	22	111	2	279
Total Volume:	45	48	2	9	969	92	55	37	111	253	1016	29	2666
Approach %	47%	51%	2%	1%	91%	9%	27%	18%	55%	19%	78%	2%	
Peak Hr Begin:	16:30												
PHV	27	23	0	4	486	52	29	22	58	132	562	13	1408
PHF	0.595			0.852			0.757			0.921			

Pedestrian/Bicycle Count Report

Location ID: 12
North/South: Morrison St
East/West: Tulare Ave

Date: 01/16/24
City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	1	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	1	1	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 1
North/South: Oakmore Street
East/West: Prosperity Avenue

Date: 02/01/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	5	0	0	1	7	0	0	0	0	0	16	2	31
6:15	8	0	0	0	13	0	0	0	0	0	19	4	44
6:30	7	0	2	1	10	0	0	0	0	0	18	4	42
6:45	14	0	0	1	22	0	0	0	0	0	21	8	66
7:00	13	0	0	1	10	1	0	0	0	0	22	14	61
7:15	21	0	4	7	25	0	0	0	0	0	36	25	118
7:30	24	0	7	7	47	0	0	0	0	0	51	39	175
7:45	32	0	6	14	76	0	0	0	0	0	57	21	206
Total Volume:	124	0	19	32	210	1	0	0	0	0	240	117	743
Approach %	87%	0%	13%	13%	86%	0%	0%	0%	0%	0%	67%	33%	
Peak Hr Begin:	7:00												
PHV	90	0	17	29	158	1	0	0	0	0	166	99	560
PHF	0.704			0.522			0.000			0.736			

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 1
North/South: Oakmore Street
East/West: Prosperity Avenue

Date: 02/01/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	17	0	2	2	43	0	0	0	0	0	40	19	123
16:15	29	0	6	5	38	0	0	0	0	0	48	13	139
16:30	20	0	4	1	50	0	0	0	0	0	46	18	139
16:45	24	0	6	6	34	0	0	0	0	0	44	22	136
17:00	28	0	2	10	42	0	0	0	0	0	65	13	160
17:15	54	0	5	6	36	0	0	0	0	0	55	19	175
17:30	25	0	2	1	31	0	0	0	0	0	28	10	97
17:45	10	0	1	4	21	0	0	0	0	0	46	6	88
Total Volume:	207	0	28	35	295	0	0	0	0	0	372	120	1057
Approach %	88%	0%	12%	11%	89%	0%	0%	0%	0%	0%	76%	24%	
Peak Hr Begin:	16:30												
PHV	126	0	17	23	162	0	0	0	0	0	210	72	610
PHF	0.606			0.889			0.000			0.904			

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 1
North/South: Oakmore Street
East/West: Prosperity Avenue

Date: 02/01/24
City: Tulare, CA

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 2
North/South: Mooney Boulevard (SR 63)
East/West: Seminole Avenue

Date: 02/01/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	63	2	12	0	0	0	53	0	0	0	0	130
6:15	0	64	5	26	0	0	1	59	0	0	0	0	155
6:30	0	71	9	23	0	0	6	87	0	0	0	0	196
6:45	0	83	8	17	0	1	6	112	0	0	0	0	227
7:00	0	90	9	23	0	0	4	132	0	0	0	0	258
7:15	0	110	8	37	0	0	3	166	1	0	0	0	325
7:30	0	163	12	65	0	1	2	244	1	0	0	0	488
7:45	0	199	14	78	0	0	7	233	0	0	0	0	531
Total Volume:	0	843	67	281	0	2	29	1086	2	0	0	0	2310
Approach %	0%	93%	7%	99%	0%	1%	3%	97%	0%	0%	0%	0%	
Peak Hr Begin:	7:00												
PHV	0	562	43	203	0	1	16	775	2	0	0	0	1602
PHF	0.710			0.654			0.803			0.000			

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 2
North/South: Mooney Boulevard (SR 63)
East/West: Seminole Avenue

Date: 02/01/24
City: Tulare, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	220	28	20	0	1	12	219	0	0	0	0	500
16:15	0	247	34	24	0	0	17	185	0	0	0	0	507
16:30	0	220	40	30	0	0	13	211	0	0	0	0	514
16:45	0	270	37	30	0	0	19	213	0	0	0	0	569
17:00	0	260	34	27	0	0	5	213	0	0	0	0	539
17:15	0	305	49	33	0	0	15	231	0	0	0	0	633
17:30	0	265	49	33	0	0	10	213	0	0	0	0	570
17:45	0	267	36	25	0	0	10	154	1	0	0	0	493
Total Volume:	0	2054	307	222	0	1	101	1639	1	0	0	0	4325
Approach %	0%	87%	13%	100%	0%	0%	6%	94%	0%	0%	0%	0%	
Peak Hr Begin:	16:45												
PHV	0	1100	169	123	0	0	49	870	0	0	0	0	2311
PHF	0.896			0.932			0.934			0.000			

Pedestrian/Bicycle Count Report

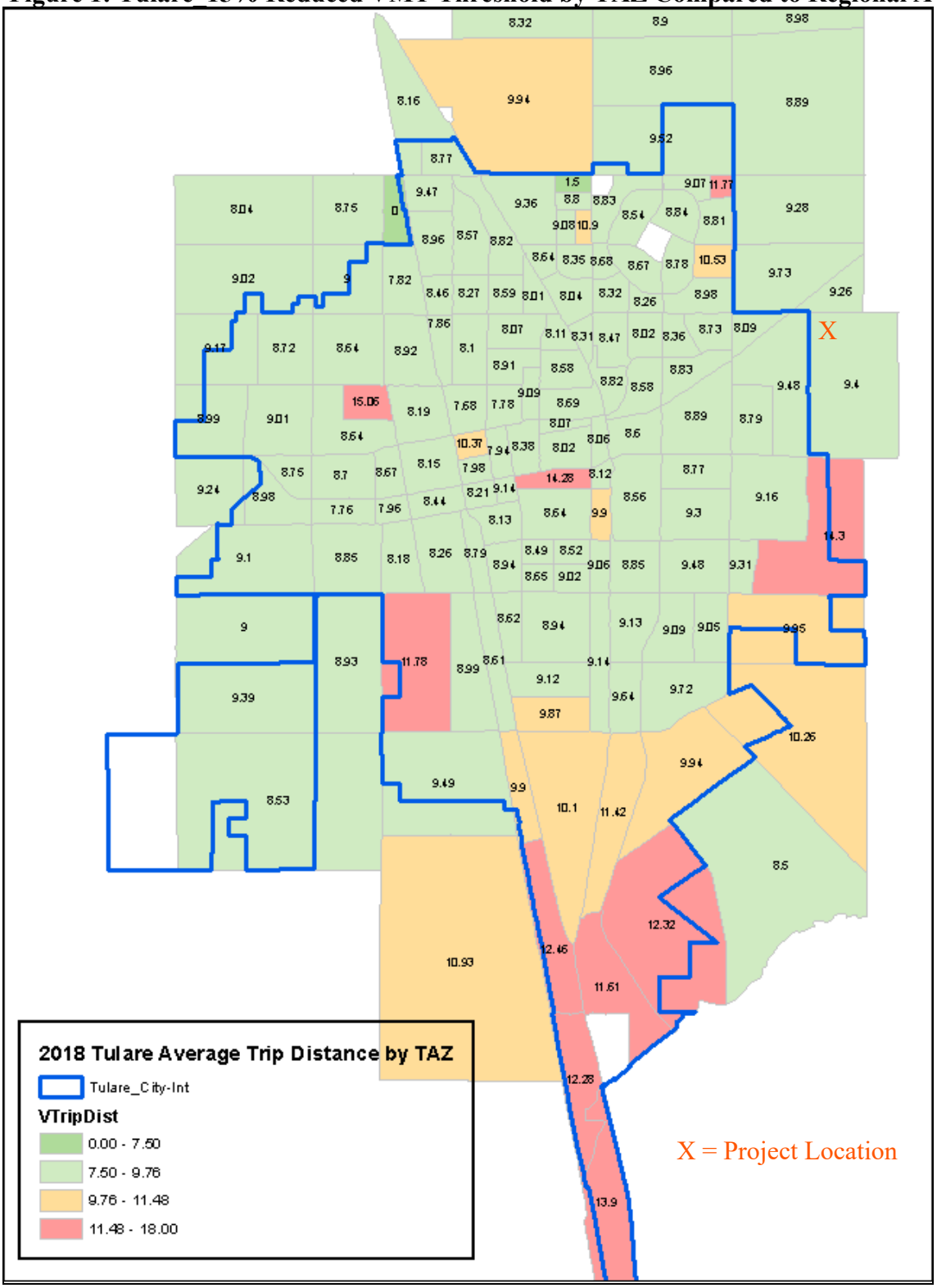
Location ID: 2
North/South: Mooney Boulevard (SR 63)
East/West: Seminole Avenue

Date: 02/01/24
City: Tulare, CA

Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

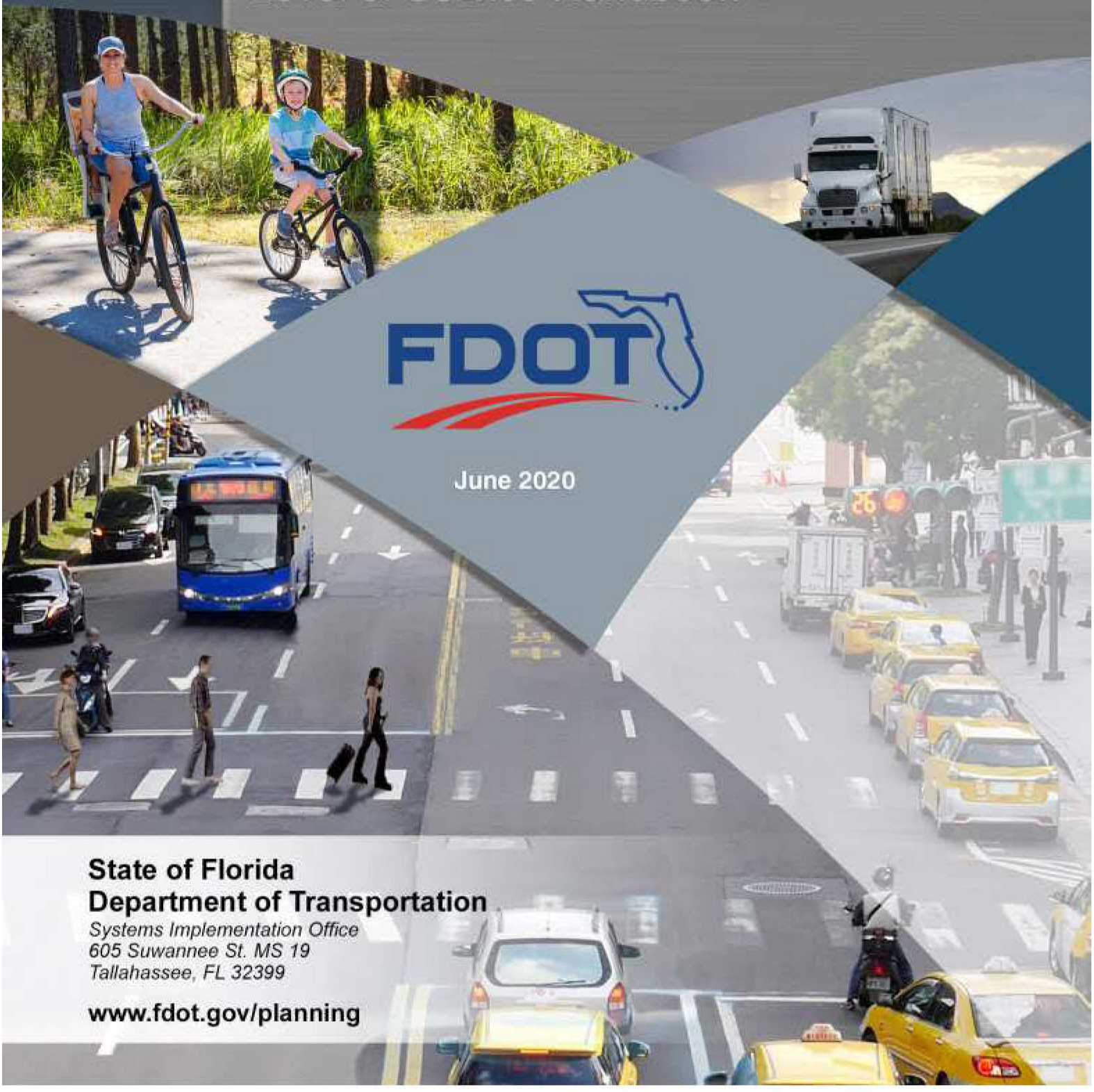
Leg:	*North*		*East*		*South*		*West*	
Class:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	1	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	1	0	0	0	0	0
17:00	0	0	0	0	0	1	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Figure 1: Tulare_15% Reduced VMT Threshold by TAZ Compared to Regional Average



Source: Tulare County Association of Governments, 2020.

2020
Quality/ Level of Service Handbook



June 2020

State of Florida
Department of Transportation
Systems Implementation Office
605 Suwannee St. MS 19
Tallahassee, FL 32399

www.fdot.gov/planning

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1 Executive Summary

This Quality Level of Service (Q/LOS) Handbook is intended to be used by engineers, planners, and decision-makers in the development and review of roadway capacity and roadway users' Q/LOS at generalized planning levels. This Q/LOS Handbook provides tools to quantify multimodal transportation service inside the roadway environment (essentially inside the right of way).

This edition of the Q/LOS Handbook is updated and reorganized, still providing a foundation for high-quality, consistent capacity, and level of service (LOS) analyses and review in the State of Florida. It includes new analytical techniques from the Transportation Research Board's Highway Capacity Manual (HCM), Sixth Edition, and updated Generalized Service Volume Tables. With these professionally accepted techniques, analysts can easily evaluate roadways from a multimodal perspective, which results in better multimodal decisions for projects in generalized planning phases.

The focus of generalized planning is the extensive use of default values and is intended for broad applications such as regional analyses, initial problem identification, and future year analyses. Florida's Generalized Service Volume Tables at the end of this Q/LOS Handbook are the primary tools for conducting this type of planning analysis. At this time, only Freeways and Uninterrupted Flow Highways Generalized Service Volume Tables have been updated to be consistent with the HCM methodology. The State Signalized Arterials Generalized Service Volume Tables remained the same as the 2013 Q/LOS Handbook. There are future plans to update the State Signalized Arterials Generalized Service Volume Tables to be consistent with the HCM methodology.

Florida Department of Transportation (FDOT) welcomes questions and comments on the content and concepts of this Q/LOS Handbook. FDOT will provide technical assistance and training as needed for usage of the Q/LOS process. For additional resources, see the FDOT's Systems Implementation Office (SIO) website at https://www.fdot.gov/planning/systems/. **Initial contacts should be made with FDOT District and Florida's Turnpike Enterprise personnel**.

2 Q/LOS Handbook Purpose and Scope

This Q/LOS Handbook is a tool that can be utilized to analyze and review a roadway's capacity at a generalized planning level.

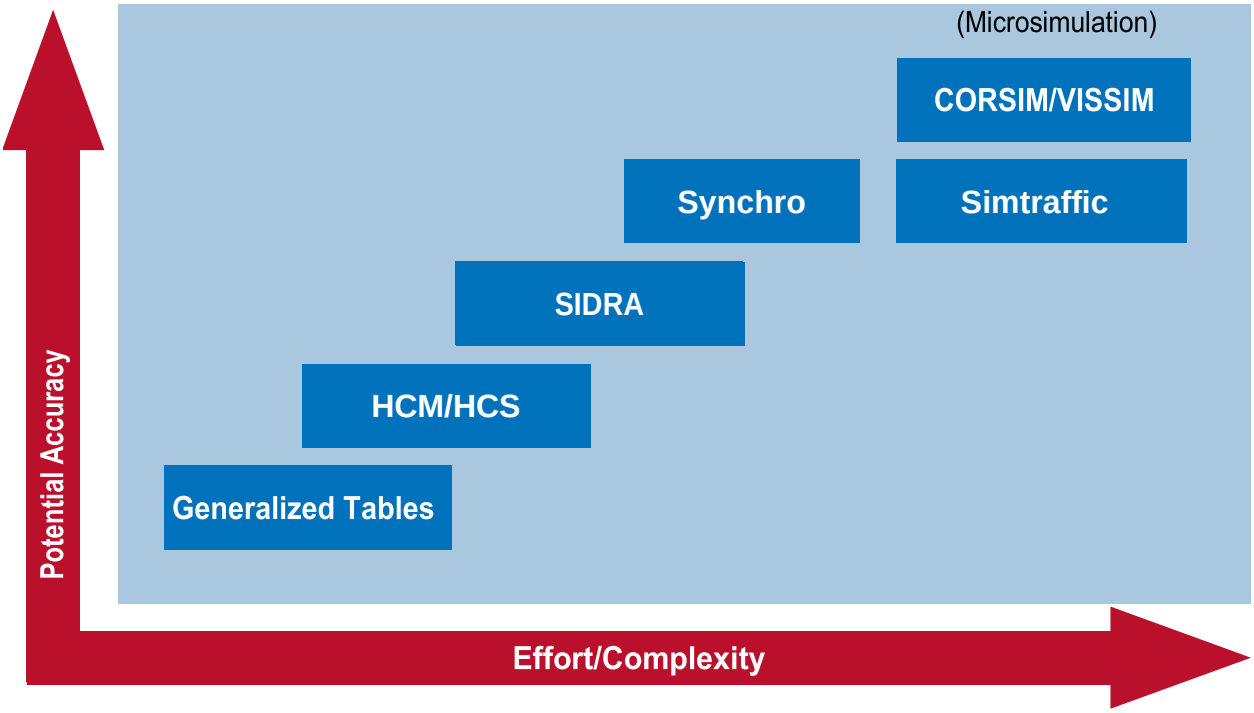
The quality of service (QOS) is a traveler-based perception of how well a transportation service or facility operates. The LOS is a quantitative stratification of the QOS into six letter grades. The LOS provides a measure that assesses multimodal service inside the roadway environment (essentially inside the right of way). **Capacity conceptually relates to the maximum number of vehicles that can pass a point on a roadway in a given amount of time under normal conditions.** The Q/LOS Handbook provides Generalized Service Volume Tables and background regarding statewide default values used in their development. The Generalized Service Volume Tables, found at the end of the Q/LOS Handbook, present maximum service volumes, or the highest numbers of vehicles for a given LOS.

Directions found within the Q/LOS Handbook provide assistance in selecting the most appropriate tools for Q/LOS analysis. This handbook offers specific instructions on how to use the Generalized Service Volume Tables.

2.1. Levels of Analysis

There are many methods for computing capacity and the LOS, which form a hierarchy ranging from Generalized Service Volume Tables (the simplest to use but potentially least accurate) to complex operational analysis tools (very precise, but time-intensive and costly). **Figure 2-1** provides a list of some traffic analysis tools measured by accuracy and complexity. In selecting the appropriate tools, tradeoffs among study purposes (e.g., generalized planning application, signal timing application), accuracy and precision of results (e.g., variability in data for current year analyses, variability in future year analyses), and data preparation effort (e.g., use of existing statewide traffic data, use of direct field measurements) should be considered. Please refer to the FDOT Traffic Analysis Handbook for additional tools and guidance in selecting the appropriate analysis tool.

Figure 2-1: Traffic Analysis Tools



2.1.1. Generalized Planning

Generalized planning covered in this handbook makes extensive use of default values and is intended for broad applications, such as initial problem identification (e.g., deficiency and needs analyses, geographic influence areas), statewide analyses (e.g., statewide calculation of delay), and future year analyses (e.g., 10-year planning horizon).

Florida's Generalized Service Volume Tables provided at the end of this handbook are the primary tools for conducting Generalized planning analysis. The updated tables have been developed using guidance provided in the HCM.

2.2 Travel Modes

The HCM defines four major travel modes: automobile, pedestrian, bicycle, and transit. Each mode includes a unique set of characteristics that define a traveler's experience during a trip, and it is important to consider each perspective when analyzing a multimodal facility.

2.2.1 Automobile

The three major elements that affect the operation of a vehicle are: roadway characteristics, traffic characteristics, and control characteristics.

Vehicles include passenger cars, trucks, vans, buses, recreational vehicles, and motorcycles. Each vehicle type has a unique set of operational characteristics, and the percentage makeup of each vehicle type within a traffic stream affects the capacity of a facility because of these differences. For example, trucks, buses, and recreational

vehicles have lower acceleration and deceleration rates than standard passenger cars. Factors, such as pavement type and condition, time of day, and weather, affect the operational characteristics of vehicles as well as driver behavior. Other factors, such as fatigue, health, and driving under the influence of drugs and alcohol, also affect driver behavior. **This handbook assumes base conditions that include typical drivers on dry pavement during daylight hours**.

2.2.2 Pedestrian

Many trips include at least one part where the traveler is a pedestrian. This is particularly important for transit trips, where the pedestrian section of the trip may have an impact on future mode choice.

Analyzing the pedestrian experience can be summarized by two primary types of analysis: individual delay and facility attributes. Delay at intersections can be easily quantified and analyzed. The factors that describe a facility and, therefore, contribute to the overall walking experience are less easily quantified, including safety, security, lighting, grades, surface conditions, and even street activity levels. Automobile and heavy vehicle traffic volume, and the extent to which pedestrians are separated from vehicular traffic, also influence pedestrians' perception of QOS while using a sidewalk. **This handbook accounts for the user's perception and facility attributes when determining Pedestrian LOS (PLOS).**

2.2.3 Bicycle

Bicycles are used to make a variety of trips, including trips for recreation, commuting, and errands. Bicycles can help extend the market area of transit service as bicycle travel is typically five times faster than travel on foot.

Similar to the pedestrian experience, Bicycle LOS (BLOS) can be summarized by delays encountered at intersections as well as the attributes of the facility itself. As with the pedestrian analysis, the Q/LOS Handbook focuses on facility attributes when determining BLOS. These attributes include the volume and speed of adjacent vehicles, heavy vehicle presence, the presence of on-street parking and pavement conditions. Because of the severe deterioration of perceived QOS at flow levels well below the theoretical capacity of a bike path, the concept of capacity has little utility in the design and analysis of bicycle paths.

2.2.4 Transit

Transit riders can be grouped into two primary categories: choice and captive riders. Choice transit riders typically have other means of transportation readily available, but choose transit to avoid congestion, save money on fuel and parking, use their travel time productively for other activities, and/or reduce their impact on the environment. Captive riders, however, are unable to drive because of age, physical, mental, or financial reasons, and depend on transit or other modes for their daily transportation needs.

Unlike other modes, transit is primarily focused on service levels rather than facility characteristics. Infrastructure for driving, biking, or walking is available at all times, once constructed; transit service is only available during certain times along designated routes. Additionally, transit passengers are not in direct control of their travel time, service frequency and reliability, therefore, these are important factors that affect the quality and utility of transit service.

When bus service frequencies reach a high enough level of demand (headway of approximately 10 minutes or less),

bus passengers do not feel the need to consult bus schedules. This allows transit users the freedom to treat the system as they would treat other modes. Service frequencies that require passengers to plan their trips around a limited transit schedule offer much less utility, and deter choice riders.

Because transit passengers typically must walk to and from transit stops on either end of their trip, the quality of the walking experience at the beginning or end of a trip may be just as important to the transit passenger as the actual transit experience.

2.3 What's New in This Version of the Q/LOS Handbook?

This edition of the Q/LOS Handbook primarily reflects an update to the 2013 edition and incorporates updates included in the sixth edition of the HCM. The Q/LOS Handbook has been revised to focus on generalized planning for freeways and highways. No changes have been made in this version of the handbook to the arterial methodology and arterial Generalized Service Volume Tables from the 2013 Q/LOS Handbook.

The Generalized Service Volume Tables are the primary tools supported by FDOT for generalized planning. The freeway and highway automobile mode portions of the tables have been updated using the Highway Capacity Software 7 (HCS7), which incorporates the latest procedures provided in the HCM, Sixth Edition. The updated tables also include revised inputs and parameters that coincide with the current methodology in the HCM and default values. The updated tables can be found at the end of this handbook. A summary of the methodology changes is provided below:

- The Generalized Service Volume Tables
  - The 2020 freeway and highway Generalized Service Volume Tables were developed using HCS7, which is based on the HCM, Sixth Edition.
  - There are **no changes** for arterial service volumes between the 2012 and 2020 Generalized Service Volume Tables.
- The freeway service volumes are now based on freeway facilities procedures, incorporating basic segments and interchanges rather than just basic segments.
- The inputs are generally consistent between the 2012 and 2020 versions of the tables, but there have been some updates to maintain internal consistency in the 2020 set of tables.
- New inputs such as Speed Adjustment Factor (SAF) and Capacity Adjustment Factor (CAF) have been introduced into the development of the tables because the input requirements for HCS7 are more extensive than those for Level of Service Planning (LOSPLAN).
- FDOT **no longer** supports the LOSPLAN program and it has not been included in this version of the handbook.

3 Q/LOS Principles

Providing safety and mobility for people and goods remains transportation's most essential function and part of FDOT's mission. There are four dimensions of mobility:

- Quality of travel: traveler satisfaction with a facility or service.
- Quantity of travel: magnitude of use of a facility or service.
- Accessibility: ease in which travelers can engage in desired activities.
- Capacity utilization: quantity of operations relative to capacity.

This Q/LOS Handbook focuses primarily on quality, followed by capacity utilization. The quantity of travel and accessibility dimensions are not addressed in this Q/LOS Handbook.

The QOS is based on a user's perception of how well a transportation service or facility operates. In other words, it's how travelers perceive the overall QOS.

The LOS is a quantitative stratification of the QOS.The HCM divides highways QOS into six letter grades, A through F, with A being the best and F being the worst. With this scheme, traffic engineers more easily explained operating and proposed design concepts to the general public and elected officials.

Despite its widespread use as an independent measurement, it is important to note that the LOS is simply a quantitative breakdown from transportation users' perspectives of transportation QOS. The LOS reflects the QOS, as measured by a scale of user satisfaction, and is applicable to each of the following modes that use roadways: automobiles, trucks, bicycles, pedestrians, and buses.

Because this handbook deals with the overall quality of user satisfaction and its quantitative breakdown, it is labeled as the Q/LOS Handbook. The measurement techniques, however, are simply referred to as LOS analysis. This Q/LOS Handbook deals with the QOS and the LOS that roadways provide to users (i.e., motorists, bicyclists, pedestrians, and transit passengers) and provides planning tools to assist transportation planners and engineers. The overall quality of the entire trip experience, which depends on a variety of factors, including aesthetics, safety, and other social measures are not covered in this handbook.

3.1 Common Q/LOS Misconceptions

Common misconceptions about Q/LOS that often arise:

- The QOS is directly related to all other dimensions of mobility.

This misconception is related to the relationship between quality and other dimensions of mobility. *The QOS is frequently related to the other dimensions of mobility, but not in all cases.* Q/LOS for automobile drivers is usually closely linked to how many other vehicles are on the road. However, the relationship is not always perfect.

For example, arterial speeds are more closely tied to signalization conditions than the number of other vehicles on the roadway. A higher Q/LOS grade may exist on a four-lane arterial with twice the volume of another arterial due to efficient signal progression. For transit users, pedestrians, and bicyclists, there is often an even weaker relationship between total demand and Q/LOS. **In most situations in Florida, the total number of bicyclists and pedestrians on a facility has very little, if any, impact on Q/LOS.Similarly, in most of Florida, bus**

frequency is typically much more important to transit users than how many people are actually on a bus.

In some cases, particularly for the non-automobile modes, an analysis of total potential demand is a more important component of the decision-making process than the QOS. This handbook only addresses Q/LOS, not the methods of determining overall demand or mode splits. Other tools, such as logit models, are more appropriate for these types of analyses.

- The LOS is applicable only to automobile analysis, while the QOS is related to the non-automobile modes.

This misconception is that LOS applies only to automobiles, and QOS applies to the non-automobile modes. It is often assumed that while automobile analyses are highly quantitative, the bicycle, pedestrian, and transit analyses are more qualitative. *However, the bicycle, pedestrian, and transit techniques are as quantitative and rigorously developed and tested as those for automobiles.* An example of LOS by mode for arterials is illustrated in **Figure 3-1**.

Figure 3-1: Examples of LOS by Mode for Arterials



- The LOS A–F grades are comparable to American school letter grades.

The most common misconception about LOS A–F grades is that they are comparable to school letter grades. Although they share some basic similarities, there are some important distinctions to make at a planning level. *Unlike school grades, LOS A is not necessarily a desirable goal, and the meaning of A–F is not entirely consistent across modes.* **Although it is true that LOS A is best and LOS F is worst, this is strictly from a traveler experience and perspective. LOS A is not necessarily a desirable goal to achieve from an overall transportation or societal perspective.** LOS A in a peak travel hour could be an indicator of an inefficient use of limited funding. It is simply not cost-effective to design the state's roadways to operate at LOS A during the peak hour. FDOT's LOS targets in **Chapter 10** should be considered a desirable condition during the peak hour, with significant variance from those targets in either direction an undesirable condition. The LOS targets are an FDOT Policy (000-525-006) and discussed in **Chapter 10**.

Although LOS F represents a failing condition, there are more factors to consider when the LOS reaches F. Essentially, LOS F either means travel demand exceeds capacity and the roadway is operating in oversaturated conditions, or another undesirable condition exists.

Although each of the methodologies for automobiles, bicycles, pedestrians, and buses make use of the LOS A–F

scales, **the meaning of A–F is not entirely consistent across the modes.**

Transportation professionals widely consider LOS D for the automobile mode an acceptable condition, and this threshold is often used as a design condition in urbanized areas. The bus and automobile LOS scales were developed by transportation professionals, with the objective of classifying various levels of congestion in undersaturated conditions. Members of the general public, however, determined the derivation of the bicycle and PLOS thresholds, thus incorporating a general perception of LOS D as a largely undesirable condition. Because of this, LOS D likely represents a worse condition from the user perspective for the bicycle and pedestrian modes than the automobile and bus modes. FDOT and its research team evaluated and considered various methods to make the LOS thresholds more consistent across modes, but found no scientific basis to adjust the scales. Users should therefore simply be cautious about comparing the same LOS letter grade across modes.

3.2. Highway Capacity Manual

For capacity and automobile, pedestrian, and bicycle Q/LOS analysis, the HCM is the foremost recognized and accepted analysis tool. HCM defines capacity as the maximum sustainable flow rate, which persons or vehicles can reasonably be expected to traverse a point or a uniform segment of a lane or a roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

3.2.1 Traffic Flow and Capacity Concepts

The HCM defines two primary facility types: uninterrupted and interrupted flow facilities. The terms refer to the type of facility and, therefore, the analysis type, not the quality of traffic flow at any given time.

Uninterrupted flow facilities have no fixed causes of delay or interruption external to the traffic stream, such as signals or stop signs. Non-tolled freeways represent the purest form of uninterrupted flow, because there are no fixed interruptions to traffic flow, and access to the facilities are limited to ramp locations. Multilane and two-lane highways operate under uninterrupted flow in long segments between points of fixed interruption (e.g., traffic signals), but it is often necessary to examine the points of fixed interruption using interrupted flow methodologies.

Interrupted flow facilities have fixed causes of periodic delay or interruption to the traffic stream, such as traffic signals or stop signs, with average spacing less than or equal to 2 miles. Traffic flow patterns on interrupted flow facilities are the result not only of vehicle interactions and the facility's geometric characteristics, but also of the traffic control used at intersections and the frequency of access points to the facility. Traffic signals, for example, allow designated movements to occur only during portions of the signal cycle, and therefore affect flow and capacity, because the facility is not available for continuous use. Traffic signals also create platoons of vehicles that travel along the facility as a group. By contrast, intersections controlled by all-way stops and roundabouts discharge vehicles more randomly, creating periodic but sometimes small gaps in traffic at downstream locations.

Capacity on uninterrupted and interrupted flow facilities can be defined in terms of, passenger cars per hour (pcph), or vehicles per hour (vph), depending on the type of analysis or system element.

Reasonable expectancy is the basis for defining capacity. Capacity is, therefore, not the absolute maximum flow rate observed at a facility, but rather a flow rate that can be achieved repeatedly for peak periods of sufficient

demand.

Prevailing roadway, traffic, and control conditions define capacity. These conditions should be relatively uniform for any segment of a facility that is analyzed. Base conditions, by comparison, assume optimum conditions, including good weather, dry pavement conditions, users who are familiar with the system, and no impediments to traffic flow. In most cases, prevailing conditions differ from base conditions (e.g., there are trucks in the traffic stream, rolling terrain). As a result, the computations of capacity, service flow rate, and LOS include an adjustment to capacity under base conditions.

3.2.2. Bicycle LOS (BLOS)

BLOS is based on bicyclists' perceptions of the roadway environment. BLOS is based on five variables, with relative importance ordered in the following list:

- Average effective width of the outside through lane
- Vehicle volumes
- Vehicle speeds
- Heavy vehicle (truck) volumes
- Pavement condition

Average effective width is largely determined by the width of the outside travel lane and striping for bicyclists but includes other factors, such as the effects of street parking and drainage grates. Each of the variables is weighted by coefficients derived by stepwise regression modeling importance. A numerical LOS score, generally ranging from 0.5 to 6.5, is determined and stratified to an LOS letter grade. Thus, unlike the determination of automobile LOS, in which there is typically only one service measure (e.g., average travel speed), BLOS is determined by multiple factors.

3.2.3. Pedestrian LOS (PLOS)

Like BLOS, **PLOS is based on the pedestrians' perceptions of the roadway or nearby roadside environment.** PLOS is based on four variables with relative importance ordered in the following list:

- Existence of a sidewalk
- Lateral separation of pedestrians from vehicles
- Vehicle volumes
- Vehicle speeds

The PLOS model applies to the roadway facilities within the right of way. Therefore, estimating PLOS for facilities outside the right of way at significantly greater distance, may exceed the validated range of the model and is not recommended.

3.3. Transit Capacity and QOS

The Transportation Research Board (TRB) Transit Capacity and Quality of Service Manual (TCQSM) is the nation's leading document for transit and Q/LOS analysis. As used in this Q/LOS Handbook, transit or bus is limited to scheduled, fixed-route bus transit.

One significant exhibit in the TCQSM is a table for urban scheduled transit service based on service frequency. **Table 3-1** replicates this TCQSM table, but includes Florida-specific modifications to the adjusted service frequency.

Table 3-1: Service Frequency LOS Thresholds

Level of Service	Adjusted Service Frequency (Vehicles/hour)	Headway (minutes)	Comments
A	>6	<10	Passengers don't need schedules
B	>4	<15	Frequent service, passengers consult schedules
C	≥3	≤20	Maximum desirable time to wait if transit vehicle missed
D	≥2	≤30	Service unattractive to choice riders
E	≥1	≤60	Service available during hour
F	<1	>60	Service unattractive to all riders

3.4. Simplifying Assumptions

Planning-level analyses make extensive use of default values and simplifying assumptions to the operational models on which they are based. As such, there are multiple simplifying assumptions used in this Q/LOS Handbook.

3.4.1. Averages

This Q/LOS Handbook makes extensive use of averages. **For generalized planning (Generalized Service Volume Tables), most of the default input variables represent statewide averages. Similarly, for generalized planning, simple averages are recommended.** For example, if an arterial facility has daily volumes of 20,000, 25,000, and 24,000, it would be reasonable to use the average (23,000) of the three. However, users should be cautious of outlying values and use some judgment when applying simple averages. In the above example, if the first value were 10,000, the user may want to disregard that value or use the median value (i.e., 24,000).

3.4.2. Turning Movements

One of the most significant planning assumptions is that the mainline turning movements are adequately accommodated. Within this Q/LOS Handbook, the through movement is defined as the traffic stream with the greatest number of vehicles passing directly through a point. While this movement is typically the Straight Ahead movement, occasionally the right or left turn could qualify as the through movement. When the turning movement has the greatest number of vehicles (more than the Straight Ahead), it is recommended to consider the turning movement as the controlling movement. See **Section 5.9** for additional details.

Most analyses of through movements in the HCM are relatively straightforward. Complications arise with the treatment of turning or merging movements, especially for signalized intersections and arterials. By handling turning arterial movements (i.e., turns from the arterial, side-street movements) in a general way, Q/LOS and capacity analyses are greatly simplified. This is also true for some two-lane uninterrupted flow highways in which

mid-block turning movements may affect capacity. Off- and on-ramp movements along freeways are also handled in a general way and are assumed to be adequately accommodated. Most importantly, it is assumed that movements at off-ramps do not back up into the through lanes of the freeway.

When turning movements are not adequately accommodated in the available storage, the techniques to determine the LOS for an arterial found in this handbook are not appropriate. Although, the arterial analysis in this handbook includes all vehicles on the arterial, the focus is on the vehicles making through movements rather than turning movements. For example, only the green time for the through movement is included, and penalties are assigned if there are no left-turn lanes at signalized intersections and no medians exist mid-block.

3.4.3. Queue Spillback

Another major assumption is that turning movements do not back up into adjacent through lanes. Essentially, adequate storage is assumed to be available for turning vehicles on arterials and for vehicles exiting freeways. Therefore, where mainline turning movements are not adequately accommodated, the planning techniques found in the Q/LOS Handbook are not appropriate. If this is the case, higher level analysis is recommended.

3.4.4. Capacity

For the HCM analyses of uninterrupted flow facilities, capacity is set in terms of passenger cars per hour per lane (pcphpl). **Free-flow speed is estimated based on other variables, such as percent heavy vehicles, CAFs and SAFs, median type, and lateral clearance.**

For the HCM analyses of interrupted flow facilities, capacity represents the maximum number of vehicles that can pass a point during a specified time period under prevailing roadway, traffic, and control conditions.

The Q/LOS Handbook primarily relies on and reports capacity values based on the interrupted flow concept of capacity, with free-flow speed considered a roadway variable input. **For planning purposes, the assumed free-flow speed is 5 mph over the posted speed limit.**

3.4.5. Bus Frequency

For transit analysis purposes, the most significant assumption is that bus frequency is the single most important factor in determining the Q/LOS to transit users along a transit route segment or roadway facility. FDOT, in cooperation with the TCQSM authors and others, has incorporated that concept. Certainly, the LOS varies for individual transit users along a facility, but **in the determination of bus LOS along a transit route segment or roadway facility, the availability of buses is usually the more relevant performance measure.**

3.5. Arterial Analyses

ADJUSTED SATURATION FLOW RATE

Variables such as area type, speed limit, number of lanes, percent right turn lanes, percent heavy vehicles, median type, left turn lanes and population size have effects on adjusted saturation flow rates. Furthermore, as traffic queues get longer, traffic pressure affects capacity.These effects are included in FDOT's Generalized Service Volume Tables.

ADD-ON/DROP-OFF LANES

The add-on/drop-off lane (or expanded intersection) will contribute to intersection capacity, but not likely to the extent of a full through lane. The add-on/drop-off lane contains up to half the capacity of a full through lane. For any capacity benefit to be considered, two conditions should be met:

- the add lane and drop lane each must be at least 800 feet in length
- the add-on/drop-off pair combined must be at least 1,760 feet in length

For additional discussion, see **Section 4.3.1**.

ONE-WAY STREETS

The Generalized Service Volume Tables include a factor that has been approved for the evaluation of one-way streets. Essentially, one-way pairs are assumed to have a 20 percent higher service volumes than corresponding two-way roadways with the same number of lanes.

LOS CRITERIA

The maximum control delay at a signalized intersection for LOS D is 55 seconds. While that value may be reasonable based on user perception in an urbanized area, in a small town or at an isolated intersection on a rural highway, that delay would be considered LOS F. To overcome this difference in user perception, FDOT has adopted different control delay criteria in rural undeveloped and rural developed areas. The criteria are one-half, rounded up, of the urbanized area criteria. For arterials in rural developed areas, arterial Class I LOS thresholds apply. These LOS criteria are embedded in FDOT's rural undeveloped and rural developed Generalized Service Volume Tables. The LOS criteria appear on the back of each table.

3.5.1 Pedestrian and Bus Analyses

PEDESTRIAN LOS

PLOS is determined by the methodology contained in this handbook. **The methodology is consistent and unchanged from the 2013 Q/LOS Handbook.** The pedestrian LOS adjustment factors as they relate to bus LOS are shown in **Table 3-2**.

Table 3-2: PLOS Adjustment Factors on Bus LOS

Pedestrian Level of Service	Adjustment Factor
Pedestrian LOS A	1.15
Pedestrian LOS B	1.10
Pedestrian LOS C	1.05
Pedestrian LOS D	1.00
Pedestrian LOS E	0.80
Pedestrian LOS F	0.55

ROADWAY CROSSING DIFFICULTY

When catching a bus, transit users frequently have to cross a road. **Crossing difficulty is typically influenced by three broad factors: traffic signal density, crossing length, and vehicle volume.** It is more difficult to cross roadways with low signal densities than roadways with closely spaced, signalized intersections. Mid-block crossing difficulty increases with road width and lack of pedestrian refuges (i.e. restrictive or raised medians). Mid-block crossing difficulty also increases as the number of vehicles increase, which results in fewer gaps. These three broad factors and other major factors, such as vehicle speed, are interrelated. To account for crossing difficulty in a general way, FDOT's approach includes a set of roadway crossing adjustment factors which capture the crossing difficulty. **Roadway crossing adjustment factors are used to determine the adjusted bus frequency by applying a factor that captures crossing difficulty.**

PASSENGER LOAD FACTOR

Bus crowding plays a role in the user's perception of QOS, particularly on overcrowded buses when no seating is available. FDOT's approach includes a set of passenger load factors, which are applied to help determine the adjusted bus frequency value. **Passenger load factors are used to determine the adjusted bus frequency value by applying a factor commensurate to the level of passenger crowding.** These factors can be found in **Chapter 7** of this Q/LOS Handbook.

BUS STOP AMENITIES

Passenger comfort and safety within the passenger waiting areas play a role in user perception of the QOS and desirability of a transit system. FDOT's approach includes a set of bus stop amenity factors, which are used to help determine the adjusted bus frequency value. The factors can also be found in **Chapter 7** of this Q/LOS Handbook.

BUS STOP TYPE

Delay time at bus stops plays a role in travel times along routes, and thus impacts overall average travel speed. **FDOT includes a bus stop type adjustment factor, which is used to add 15 to 35 seconds of delay per route for typical and major bus stops, respectively.**

BUS FACILITY ANALYSIS

The TCQSM structure for Q/LOS analysis consists of points (e.g., bus stops), route segments, and systems. It does not include a facility analysis. Nevertheless, to maintain consistency, a method of aggregating segment-level bus frequency to facility-level was needed. At the generalized level, a simple average is acceptable. For example, if on a 3-mile facility, four buses serve the first 2 miles and two buses serve the last mile, then using a value of three buses [(4 + 2)/2] is acceptable for a generalized level analysis.

4 Roadway Variables

Florida's Generalized Service Volume Tables are based on the HCM, TCQSM, and Florida roadway, traffic, control (signalization), and multimodal data. **The resulting tables are valid in Florida, and FDOT encourages the use of the generalized planning level approach.** Recognizing varying characteristics with the state and differing roadway, traffic, control, and multimodal characteristics, the Generalized Service Volume Tables are not adequate for all analysis needs. **Chapters 4 through 7** provide a description of input variables used in the development of the Generalized Service Volume Tables. Roadway variables describe the geometric and functional characteristics of a facility.

4.1. Roadway Type

Compatible with the terminology of the HCM, this Q/LOS Handbook is based on three major roadway types:

- Freeways
- Uninterrupted flow highways
- Interrupted flow roadways

Note: when using the Generalized Service Volume Tables, the number of lanes for arterials and other interrupted flow facilities should be determined at major intersections, rather than mid-block.

4.1.1. Freeways

Freeways are multilane, divided highways with at least two lanes for exclusive use of traffic in each direction and full control of ingress and egress.

4.1.2. Highways

Uninterrupted flow highways are roadways with a combination of roadway segments, which have average signalized intersection spacing greater than 2 miles and are not freeways. Because of the significantly different operating characteristics, these types of roadways are frequently also distinguished as two-lane highways and multilane highways.

4.1.3. Arterials

Interrupted flow roadways or arterials are characterized by signals with average signalized intersection spacing less than or equal to 2 miles. In this Q/LOS Handbook, signalized arterials are the predominant type of interrupted flow roadway. They primarily are operated by the state and serve through traffic. Also included in this category are signalized Non-State roadways, but not local streets. As used here, signalized intersections refer to all fixed causes of interruption to the traffic stream and may occasionally include stop signs or other control types.

Arterials are further classified based on posted speed. There are two arterial classes:

- Class I: Arterials with a posted speed of 40 mph or greater
- Class II: Arterials with a posted speed of 35 mph or less

4.2. Area Type

Four broad area type groupings are used in this Q/LOS Handbook, as shown in **Figure 4-1**:

- Core Urbanized areas (areas with a population of 1,000,000+) and Urbanized areas (other urbanized areas with a population of 50,000+)
- Transitioning areas (transitioning into urbanized areas)
- Urban areas (areas with a population of more than 5,000 not in urbanized areas)
- Rural areas (rural undeveloped areas or developed areas with less than 5,000 population)

Figure 4-1: Area Types



The area types in the Generalized Service Volume Tables correspond well with FDOT's LOS targets; however, there are a few special cases**. FDOT District LOS Coordinators should be consulted for applicable boundaries within their districts.**

There may be small lengths of roadways (e.g., approximately 6 miles for freeways, 3 miles for nonfreeways) between area types or adjacent to an area type that, from a logical and analytical sense, should be combined into one area type or another.

These situations typically occur with adjacent interchanges or in transitioning areas, but may also occur elsewhere. FDOT districts have the flexibility to adjust the area type boundaries or designate a roadway with a certain area

type under these circumstances.

As Florida's population grows, area types may change for a specific location or roadway in future years. FDOT's district offices (contact information available at http://www.fdot.gov/info/moreDOT/districts/district.shtm) should be consulted if analysts believe different area types are appropriate for a future study period.

4.2.1. Core Urbanized and Urbanized Areas

Core urbanized and urbanized areas are defined as approved boundary, which encompasses the entire Census Urbanized Area, as well as the surrounding geographic area likely to become urbanized within the next 20 years, as agreed on by FDOT, Federal Highway Administration (FHWA), and the Metropolitan/Transportation Planning Organization (MPO/TPO). **Core urbanized area types are distinguished by whether the area's population is more or less than 1 million.** Currently, the grouping of more than 1 million applies to the MPO areas that include central cities: Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach. These are referred to as "core urbanized." **The minimum population for an urbanized area is 50,000.**

Previously, core urbanized thresholds were developed by applying a different K factor to the urbanized design hourly volume (DHV) thresholds, but after careful consideration, it was noted that additional factors could be applied in the analysis process for a core urbanized area, such as speed and ramp density, and these should be considered. As a result, new DHV, directional design hourly volume (DDHV), and annual average daily traffic (AADT) thresholds were developed for core urbanized areas based on separate analysis from the urbanized thresholds. **The urbanized areas with less than 1 million population are referred to as "other urbanized."**

4.2.2. Transitioning Areas

Transitioning areas are fringe areas that exhibit characteristics between rural and urbanized/urban. Transitioning areas are intended to include areas that, based on their growth characteristics, are anticipated to become urbanized or urban in the next 20 years.

Frequently, the Metropolitan Planning Area is used for the transitioning area adjacent to an FHWA Urbanized Area (Adjusted Census Urbanized Area Boundary). The definition of Metropolitan Planning Area mentions the "contiguous area expected to become urbanized with the 20-year forecast period." It is the contiguous area that should be considered the transitioning area. However, in practice, most MPOs have not delineated those contiguous or transitioning areas, and many of the Metropolitan Planning Areas extend to remote rural areas of counties. When the MPO does not identify these transitioning areas, or areas adjacent to urban (but not urbanized) areas, FDOT districts, in cooperation with local governments, may delineate transitioning areas for LOS purposes.

Keeping the boundaries relatively consistent over time is desirable to achieve understanding by all potential parties. The transitioning boundary should be reviewed and adjusted as a part of the census cycle update, consistent with the setting of the FHWA Urbanized Area boundaries. It is appropriate to review the transitioning boundary in conjunction with a Long-Range Transportation Plan update. The FDOT District LOS Coordinators should be consulted for transitioning boundaries within their districts. It is recommended that boundaries for transitioning areas be based on the location of major roadways or at interchanges. This avoids portions of a freeway changing from transitioning to urbanized or rural between interchanges. It is desirable for an urban street to have the same designation between major roadways and not change mid-block when aligning the boundary with major roads is impractical.

4.2.3. Urban Areas

An urban area has a population between 5,000 and 50,000 and is not within an urbanized area. The boundaries for cities with populations over 5,000 and not within urbanized areas are primarily set by existing city limits and must be agreed upon by FDOT, the local government, and FHWA. However, the 5,000 population threshold is primarily a surrogate for areas that exhibit urban traffic characteristics. When a city has a population of less than 5,000 but the surrounding area has a population of more than 5,000 and the city has an urban character, then it is reasonable to classify it with a population of more than 5,000 in the Generalized Service Volume corresponding to a population of over 5,000. These are Generalized Service Threshold Volume Tables 2, 5 and 8 at the end of this handbook following the Glossary.

Other situations exist in which an area has a population of over 5,000 and yet, the area is more characteristic of a rural developed area. In this situation, it is reasonable to use the "developed areas less than 5,000 population" sections of Generalized Service Threshold Volume Tables 3, 6, and 9 included at the end of this handbook following the Glossary. In both of these situations, FDOT District Planning Offices, after consultation with the Central Office Systems Implementation Office, should determine the appropriate designation to use.

4.2.4. Rural Areas

Rural areas consist of two types:

- Rural undeveloped: areas in which there is no or minimal population or development
- Rural developed: areas consisting of cities and other populated areas with populations of less than 5,000 or along coastal roadways

Generally, the portion for cities or developed areas in Generalized Service Threshold Volume Tables 3, 6, and 9 should be applied to areas with a population between 500 and 5,000 and not immediately adjacent to urbanized, urban, or transitioning areas. This portion of the tables also should be generally applied to coastal roads not in urbanized, urban, or transitioning areas.

4.3. Number of Through Lanes

The number of through lanes is one of the most important variables to analyze a roadway's capacity and LOS. Emphasis is placed on through lanes, or lanes that directly accommodate through traffic. The number includes shared lanes (e.g., through/right), but does not include exclusive turn lanes or two-way left-turn lanes on arterials, auxiliary lanes on freeways, or passing lanes on two-lane highways. Arterials are often described as having an odd number of lanes when two-way left-turn lanes are present. However, for highway capacity and LOS analyses, that is not appropriate. The two-way left-turn lane does not accommodate through vehicles, and the facility is more appropriately characterized as having an even number of lanes with a non-restrictive median.

Usually the total number of through lanes in both directions is used to describe roadways. However, this Q/LOS Handbook bases analyses upon a single peak direction. As an example, an LOS analysis for a six-lane freeway is based on three lanes, using the higher directional traffic volume. Similarly, an LOS analysis for a four-lane urban street would be based on two directional lanes.

A common question when using the Generalized Service Volume Tables is how do we handle odd number lanes along the facility. The Generalized Service Volume Tables contain adjustment factors based on certain

characteristics of the facility (i.e., turn lanes, medians, etc.). Any applicable adjustment factors are first applied and then the average service volumes are averaged.

For example, a rural undivided 5-lane arterial facility with exclusive left-turn lanes and without exclusive right-turn lanes will have an adjusted LOS C threshold of 35,388. This is calculated using the Generalized Service Volume Table 3. The LOS C thresholds for an undivided 4 and 6-lane arterial in a rural area is 29,300 and 45,200, respectively. To calculate the 5-lane LOS C threshold, first account for any applicable adjustment factors. For this example, the LOS thresholds must be adjusted by -5% for multilane arterials that have exclusive left-turn lanes and no exclusive right-turn lanes. After this adjustment is applied, the new 4 and 6-lane LOS C thresholds are 27,835 and 42,940, respectively. To obtain the final 5-lane LOS C threshold, the newly adjusted 4 and 6-lane LOS C thresholds, 27,835 and 42,940, are averaged to obtain the 5-lane LOS C threshold of 35,388 to be used in the analysis.

4.3.1. Arterials

An important aspect of this Q/LOS Handbook is the methodology for determining an arterial's number of through lanes. The ultimate result of the LOS analysis is a facility estimation of the LOS, and **it is widely recognized that signalized intersections are the arterial's primary capacity constraint; therefore, it is appropriate to place more emphasis on the intersections' characteristics than the mid-block characteristics.** Generally, mid-block segments have capacities far exceeding those of major intersections, and it is rare for significant delays to occur mid-block. By weighting the effects of intersections more heavily, a more accurate aggregate estimation is possible.

Site-specific characteristics (e.g., intensity and type of land use, driver behavior, speed, etc.) can dramatically affect the viability of add-on/drop-off pairs as through lanes; therefore, each approach should be examined on a case-by-case basis. Analysts are strongly cautioned to review all pertinent characteristics prior to adjusting the number of through lanes used. The reviews should be conducted during peak travel conditions. Analysts are encouraged to consult with their FDOT District LOS Coordinators prior to applying this concept. The following guidelines are offered as a capacity estimating tool only. This process should never be used for the design or redesign of an expanded intersection.

For any capacity estimation to be considered, two conditions should be met:

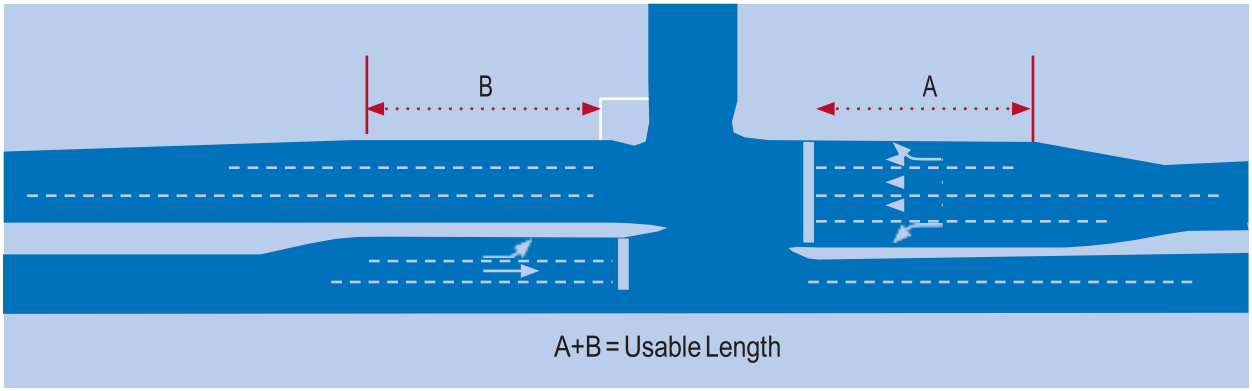
- The add and drop lanes must each be at least 800 feet in length
- The add-on/drop-off pair combined must be at least 1,760 feet in length

If either of these conditions is not met, then no additional capacity is assumed.

If the add-on/drop-off pair is at least one-third of a mile in length (roughly divided equally between approach and departure and exclusive of tapers and cross-street width, as represented by A+B in **Figure 4-2**), it may be reasonable to consider an additional one-half lane for capacity purposes. For example, in the accompanying diagram, if A = 1,000 feet and B = 1,000 feet, then it would be reasonable to consider that the intersection approach has 2.5 effective through lanes.

With a length of at least one-half mile (roughly divided equally between the add and drop lanes), it may be reasonable to consider the add-on/drop-off pair as adding up to one full through lane.

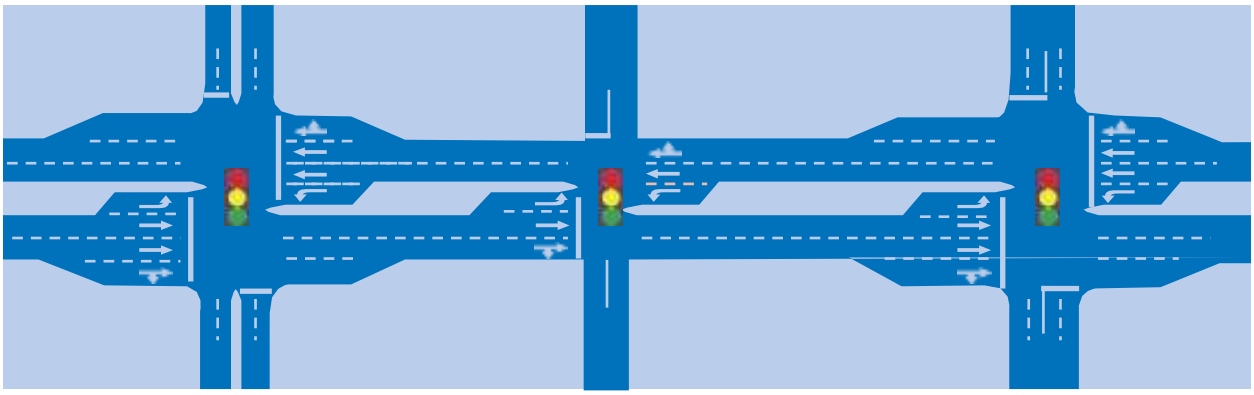
Figure 4-2: Usable Length



When using the Generalized Service Volume Tables, the number of through lanes on a facility is typically determined by the through and shared through/right lanes at major intersections rather than mid-block. **Figure 4-3** shows the mid-block segments with four lanes, with two lanes in each direction. The major intersections each have six lanes, with two through and one shared through/right add-on/drop-off lane with tapers adequate for safe merging.

In this illustration, as in many cases, minor signalized intersections have green times so heavily weighted to the major urban street that they do not cause significant delays to through traffic. When this is the case, it is sometimes acceptable to disregard the number of lanes at these minor intersections; instead, the determination should be based on the lanes at major intersections. So in terms of the LOS, this particular facility has six lanes.

Figure 4-3: Example of Six-Lane Roadway



4.3.2. Highways

For uninterrupted flow highway facilities, the number of lanes is the basic segment or mid-block laneage. For example, a two-lane highway, which is widened to four lanes at major intersections, should be considered a two-lane highway.

4.4. Speed

4.4.1. Posted Speed

The maximum speed at which vehicles are legally allowed to travel over a roadway segment.

4.4.2. Free-Flow Speed

Free-flow speed is the average speed of vehicles not operating under the influence of speed reduction conditions. In general, free-flow is the average speed under low-flow conditions and not influenced by control conditions, such as signalized intersections. The assumption used in this handbook is that the free-flow speed is 5 mph above the posted speed. As an example, if an arterial has a posted speed of 40 mph, the default free-flow speed used is 45 mph; however, if a more accurate free-flow speed is available, it should be used.

4.5. Median Type

4.5.1. Arterials

As used in this document, medians may be classified in one of three ways:

- restrictive median (r)
- non-restrictive median (nr)
- no median (n)

A restrictive median is a raised or grassed area normally at least 10 feet in width separating opposing mid-block traffic lanes and includes left-turn lanes.

A non-restrictive median is a painted at-grade area normally at least 10 feet in width separating opposing mid-block traffic lanes, and for arterials, accommodates mid-block left-turning vehicles to exit from through lanes. Continuous two-way left-turn lanes are considered a non-restrictive median under this definition. Situations in which restrictive or non-restrictive medians are less than 10 feet wide are considered as having no median.

FDOT included the median factor to account for lowering mid-block average travel speeds when no median is present. From the aspect of getting left-turning vehicles out of the traffic stream, the difference between a restrictive and a non-restrictive median is relatively inconsequential. Thus, in determining automobile LOS, restrictive and non-restrictive medians are treated the same.

From a pedestrian point of view, there is a significant difference between non-restrictive medians and restrictive medians. Restrictive medians give pedestrians a much safer mid-block crossing. Thus, this type of median is a consideration in determining the pedestrian crossing factor that enters the bus LOS analysis. **A non-restrictive median provides no pedestrian refuge.**

A pedestrian refuge is an area at least 5 feet but less than 10 feet in width (not a full, raised median) separating opposing mid-block traffic lanes and allowing pedestrians to cross the roadway more safely and comfortably. From a pedestrian point of view, a pedestrian refuge has nearly the same benefit as a restrictive

median. In terms of pedestrian crossing difficulty, the difference between a restrictive median and pedestrian refuge is relatively small; therefore, in determining pedestrian crossing difficulty, the two may be treated the same.

Pedestrian refuges are not included as a distinct category. If an analyst needs to evaluate the effects of a pedestrian refuge, it should be treated as a restricted median for transit analysis, but as no median for automobile analysis.

4.6. Exclusive Turn Lanes

4.6.1. Arterials

EXCLUSIVE LEFT-TURN LANES

The exclusive left-turn lanes are reserved for the exclusive use of left-turning vehicles. The length of these lanes must accommodate turning demand such that left-turn traffic (1) is able to enter the turn lanes behind through queues or (2) can be stored in the turn lane to ensure the through lane traffic is not blocked. When left-turn lanes are not present, a shared lane exists which is included in the number of through lanes.

When analyzing arterials without left-turn lanes, the use of the Generalized Service Volume Tables is discouraged in all but the most basic analyses. If used, the Generalized Service Volume Tables include adjustment factors for the absence of left turn-lanes. To account for the absence of left-turn lanes, adjustment factors provided in the Generalized Service Volume Tables must be manually applied to the service volumes. However, the user is cautioned that research indicates that the true value of the reduction is highly dependent on the distribution of traffic volumes among all the various movements, and a constant reduction factor, as used in the tables is not accurate.

Storage length refers to the total amount of storage available for left-turning vehicles, measured in feet. The default value is 235 feet. For new turn lanes, FDOT Design Standards must be consulted (found at https://www.fdot.gov/design/standardplans/DS.shtm).

EXCLUSIVE RIGHT-TURN LANES

Exclusive right-turn lanes are storage areas designated to exclusively accommodate right-turning vehicles.

The length of these lanes must be able to accommodate turning demand to allow for the free flow of the through movement. The number of pedestrians crossing at these locations should also be considered and accommodated.

4.7. Roadway Lengths

To properly apply the Generalized Service Volume Tables, it is necessary to partition roadways into appropriate lengths for analysis. Setting lengths too short may not adequately capture traffic flow characteristics. Vehicles will not achieve the same average running speed on a segment as over a longer facility length. Short lengths would also be subject to bias caused by signal control delay.

Furthermore, analysis results would not conform to the concept of LOS that is based on the driver perception of the operation of roadways and may not show where the most significant impact of proposed development traffic will occur. Conversely, setting lengths too long may dilute the impact of hot spots by averaging them into other portions that operate better.

FDOT District LOS Coordinators have primary responsibility for the segmentation of the State Highway System (SHS) for LOS purposes. FDOT Central Office may combine smaller segmentation lengths of a facility for statewide reporting and other purposes.

In general, the partitioning of roadways for facility analyses should be based on the following considerations, ranked in order:

- Highway system structure (including facility type, number of lanes, etc.)
- Area type boundaries
- Lengths
- AADTs

At the local level, government agencies frequently make highway capacity and LOS termini at their own jurisdictional boundaries, regardless of the appropriate facility length and termini considerations described above. Jurisdictional boundaries by themselves are usually not appropriate termini for capacity and LOS analyses. Local governments are encouraged to consult with FDOT District LOS Coordinators for applicable segmentation within their jurisdictional boundaries.

4.7.1. Arterials

For an arterial facility analysis, the general recommendation is that the facility be at least two (2) miles in length to use the service measure of average travel speed. Major intersecting arterials frequently serve as logical breaks in segmenting the arterial facility. In downtown areas, the general recommended length is at least one (1) mile.

When evaluating arterial section or facility LOS for planning, the roadway should begin and end at a signalized intersection. The following guidance is provided for some special cases:

(1) Interchanges along an arterial: At a generalized planning level, it is typically appropriate to make a break at an interchange (highway system structure criterion) that does not include a signalized intersection.

(2) Boundaries, especially urbanized area boundaries: When a signalized intersection lies just outside the boundary, it is proper to extend an analysis to the next signalized intersection if within 2 miles of a boundary for a conceptual planning analysis. For example, if a signalized intersection lies 1 mile beyond the existing urbanized boundary in a transitioning area, it is appropriate to include that signalized intersection and the 1 mile of transitioning area as part of an urbanized area analysis.

5 Traffic Variables

This chapter provides an overview of key traffic variables used in the development and use of the Generalized Service Volume Tables.

5.1. Volume and Demand

Traffic volume is the most basic of all traffic parameters and is generally defined as the number of vehicles passing a point on a transportation facility during a specified time period. Traffic volumes typically are developed separately from capacity/LOS analyses and provide input to those analyses. Various sources that determine traffic data include:

- FDOT's Florida Traffic Online (FTO) Web Application
- Extrapolation of historical growth trends
- FDOT's travel demand forecasting models
- Institute of Transportation Engineers (ITE) Trip Generation Manual

The sources listed below provide guidance on traffic forecasting and analysis:

- FDOT's Project Traffic Forecasting (PTF) Handbook
- HCM, Sixth Edition
- FDOT's Traffic Analysis Handbook

Volume is the parameter most often used to quantify traffic demand. **Traffic demand is the number of vehicles with drivers who desire to traverse a particular highway during a specified time period. While traffic demand expresses a desire, volume typically represents actual measurement.**

Misuse of measured volumes often occurs in capacity/LOS analysescausing traffic studies to report the observation and measurement of conditions as they presently exist. Current observations do not reflect constraints in the existing highway system that may prevent vehicles from accessing a desired segment of the system at any given point in time. Observed volumes on congested facilities are more a reflection of capacity constraints than of true demand.

Measured traffic volume cannot theoretically exceed roadway capacity, but traffic demand volume can exceed capacity. An example of a common misinterpretation of these two distinct terms typically occurs while collecting traffic data at an oversaturated intersection. The traffic volume that can physically be processed through a traffic signal is a measure of the capacity (or supply). When traffic volumes approach roadway capacity, the transportation system may experience abnormally long vehicle queues and excess vehicular delay. The length of the vehicle queue upstream of a traffic signal is a more accurate measure of the traffic demand that cannot be processed in the one-hour analysis period.

The impact of bottlenecks, alternative routes, latent demand, and future growth further complicates the relationship between measured traffic volume and traffic demand. **If questions arise as to the appropriateness of using measured volumes or demand volumes for capacity and LOS analyses, it is clear demand volumes should be used.**

5.2. Annual Average Daily Traffic (AADT)

AADT is the total volume of vehicle traffic on a highway or roadway segment for one year divided by the number of days in the year. Most planning applications require AADT volumes. Determining AADT values is a separate process and distinct from capacity/LOS analyses. FDOT routinely provides AADT values for state roads.

AADT values are easy to confuse with two other traffic count numbers that are used to estimate AADT. **The average daily traffic (ADT) is the total traffic volume during a given time period, more than a day and less than a year, divided by the number of days in that time period.** ADT is generated from a short-term traffic count and can be used to estimate AADT. Ensuring ADT counts are reflective of the normal average traffic is an important consideration when using them to estimate AADT on the roadways. Traffic taken during a four-day holiday, long weekend, or Saturday night when 50,000 or more football fans gather is not a normal occurrence.

Peak season weekday average daily traffic (PSWADT) is the average weekday traffic during the peak season. PSWADT numbers are normally generated by travel demand forecasting planning models, such as Florida Standard Urban Transportation Model Structure (FSUTMS). Like ADT, they can be converted to AADT by an adjustment factor.

FDOT operates two types of traffic monitoring programs: 1) continuous monitoring at selected locations using permanently installed equipment and 2) coverage counts at many temporary or short term sites using portable equipment. Further information about the traffic monitoring programs can be found in the FDOT PTF Handbook.

There are two count adjustment factors used to calculate AADT. The first, **axle correction factors are used to compensate for an axle counter's tendency to count more vehicles than are actually present.** For example, an axle counter would show a count of two when a four-axle truck runs over the sensor, even though only one vehicle is present. The second, **seasonal adjustment factors have been developed to adjust for the variation in traffic over the course of a year.** The peak season is the 13 consecutive weeks with the highest volumes. The weekly seasonal factors for those weeks will be the lowest, and the factors will be the highest for the weeks with the lowest volumes. The seasonal factor is used as follows:

AADT = (short-term traffic count) x (seasonal factor) x (axle correction factor)

Although, for planning purposes AADT is usually used, actual capacity and LOS analyses are conducted on an hourly or sub-hourly directional basis. All of FDOT's Generalized Service Volume Tables are based on peak hour directional roadway, traffic, control, and multimodal characteristics. FDOT's hourly directional tables may be viewed as the most fundamental of the tables, because the daily tables are created by dividing the peak hour directional values by the directional distribution factor (D) and the planning analysis hour factor (K). Although the determination of AADT is outside the capacity/LOS analyses, the determination of K and D is a fundamental part of capacity/LOS analyses in planning stages because of the need to convert AADT to peak hour directional volumes.

5.3. Planning Analysis Hour Factor (K)

The K factor is the ratio of the traffic volume in the study hour to AADT. Historically, FDOT has used a variety of study hours and K factors depending on the application. Frequently used K factors included the 30th highest volume hour of the year (K30), 100th highest volume hour of the year (K100), highest hourly volume to daily volume (Kp/d), 5–6 p.m. weekday volume to AADT (K5-6pm), average p.m. weekday peak volume to AADT (Kpm), average a.m. peak weekday volume to AADT (Kam), and noon weekday volume to AADT (Knoon). In general, K factors

are used for peak hour traffic analyses, but analyses can also be based on low-volume conditions, such as the analysis of truck travel in early morning hours. Roadway, traffic, and control conditions vary considerably during the day, potentially affecting capacity values and service volume thresholds.

Standard K is the primary planning analysis hour factor used in Florida, and the value is set based on the area type and facility type. The use of Standard K represents a design approach in which the K factor for a roadway is established from the planning phase through the design phase of the project development process. Rather than being a variable, Standard K values are a fixed, cost-effective parameter, much like the use of 12-foot through lanes on major, high-speed roadways. Unless otherwise noted, all references in this Q/LOS Handbook that refer to a study hour or K factor refer to Standard K.

The Standard K factor is used to convert a peak hour volume to an AADT and vice versa. The Standard K factors used in the Generalized Service Volume Tables were obtained through a methodical process to obtain representative Standard K factors. On the freeways in the seven largest urbanized areas in Florida (Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach), Standard K represents a peak study period. For all other facilities, Standard K represents a peak hour not within the peak season. Standard K Factors for planning and design analysis are not directly applicable to the Turnpike, other toll roads, and managed lanes. For more information on the K Factors, refer to FDOT's PTF Handbook.

The K factor generally drops as an area becomes more urbanized and high traffic volumes are spread out over longer time periods. If adequate documentation is provided, FDOT would consider deviations from the Standard K table for special facility types.

The recommended Standard K factors can be found in the FDOT PTF Handbook and the analyst must refer to the PTF Handbook for use of appropriate K factors in projects. The K values used in development of the Generalized Service Volume Tables included in this handbook are consistent with the PTF Handbook. They are listed below:

- Urbanized (Core urbanized/Core freeways)
  - Freeways: 0.09 (0.085)
  - Highways: 0.090
  - Arterials: 0.090
- Transitioning
  - Freeways: 0.098 (average of Transitioning to Urbanized Areas and Urban)
  - Highways and arterials: 0.090
- Rural developed and rural undeveloped
  - Freeways: 0.105
  - Highways and arterials: 0.095

Standard K values on freeways in large urbanized areas range from 8.0 to 9.0 percent, while Standard K values on these "core freeways" in large urbanized areas are typically lower in this range. The lower K values signify a peak period, as opposed to a peak hour. The urban core freeway K values in large urbanized areas are available on FDOT FTO Web Application managed by FDOT's Transportation Data and Analytics (TDA) Office.

5.3.1 Multimodal Transportation Districts (MMTD)

The purpose of MMTDs is to encourage desirable transportation environments for all users, including transit passengers, pedestrians, cyclists, and motorists. The designation of such districts recognizes the inherent, integral relationship between transportation, land use, and urban design and the degree to which each of these elements affect the others. Local governments opting to designate an MMTD assign secondary priority to vehicle mobility and primary priority to assuring a safe, comfortable, and attractive pedestrian environment, with convenient connections to transit. FDOT supports local governments that are committed to such efforts. Implementing MMTDs should help foster the use of multiple modes of transportation, leading to a reduction in automobile use while maintaining high mobility characteristics in the area.

The primary way FDOT supports these designated areas is through its LOS targets. FDOT promotes lower acceptable automobile travel speeds for longer durations in the planning, design, and operations of its facilities.

5.4. Directional Distribution Factor (D)

The peak hour D factor is the proportion of an hour's total volume occurring in the higher volume direction.

The preferred approach to obtain D factor data is from the FTO Web Application, which provides a D factor for all state roads. The FTO Web Application reports the average of measured D values around the 200th highest hour from nearby and comparable roadway sites. The statewide minimum acceptable D factor is 0.51 (this is not the default valueand should only be used in an LOS analysis if adequate justification is provided for the specific roadway). The D factor of 0.55 was used in the Generalized Service Volume Tables for all facility and area types. Using such an approach provides statewide consistency and reasonable accuracy in the values indicated and at a minimum cost. Additional guidance and the recommended range of D factors can be found in the FDOT PTF Handbook.

5.5. Peak Hour Factor (PHF)

The peak hour factor (PHF) is the hourly volume divided by the peak 15-minute rate of flow within the peak hour, specifically:

$$PHF = \frac{(Hourly\ Volume)}{4(Peak\ 15-minute)}$$

The planning-level approach for addressing volume variations within the study hour has been adopted within this handbook. PHF based on area type were used to develop the vehicular service volumes in this Q/LOS Handbook. The PHF associated with each area type is:

- Urbanized areas**:** 0.95
- Transitioning/urban areas**:** 0.92
- Rural areas**:** 0.88

The PHF associated with the area type is consistent with the sixth edition of the HCM. For more information on the PHF, refer to FDOT's PTF Handbook.

5.6. Base Saturation Flow Rate

The HCM uses the term "base saturation flow rate" for interrupted flow roadways and capacity, or base capacity, for uninterrupted flow roadways to describe the maximum steady flow. **Base saturation flow rate is the maximum steady flow rate, expressed in pcphpl, at which passenger cars can cross a point on interrupted flow roadways.** These are not the same as capacity, as normally used to define how many vehicles a roadway can reasonably accommodate. The base saturation flow rates/capacities for Florida's roadway facilities are:

- Arterials and other interrupted flow facilities: 1,950 pcphpl (assuming 100 percent green time)
- Basic freeway segment (70 mph free flow speed): 2,400 pcphpl
- Uninterrupted flow multilane highway segments (60 mph free flow speed): 2,200 pcphpl
- Uninterrupted flow two-lane highway segments: 1,700 pcphpl

5.7. Heavy Vehicle Percent

The FHWA has a vehicle classification scheme in which vehicles larger than a pickup truck are considered heavy vehicles. This includes vehicles with more than four wheels or a classification group of four or higher. **The percentage of these heavy vehicles in a given hour is frequently referred to as a truck factor (T).** However, to be more consistent with HCM terminology and to overcome some definitional problems with the common understanding of the meaning of a truck, this Q/LOS Handbook uses the term "heavy vehicle" and makes use of the percent of heavy vehicles in a given hour.

The heavy vehicle percentage varies dramatically by the time of day, day of week, roadway type, and adjacent land uses. Operational characteristics of heavy vehicles also vary dramatically by type of heavy vehicle (e.g., a relatively small delivery truck compared to a fully loaded 18-wheel semi-truck) and whether they are operating on an uncongested freeway or on signalized roadways. The blast effect of heavy vehicles on bicyclists also varies significantly based on the type and speed of heavy vehicles.

5.8. Speed and Capacity Adjustment Factors

The HCM 6th Edition has replaced the local adjustment factor (LAF) with the SAF and CAF. The LAF previously provided an adjustment to capacity to account for driver aggression, hurriedness, and familiarity with the facility.

The SAF is used to adjust the speed of a facility based on a combination of sources, including weather and construction work zone effects. The SAF may also be used to calibrate the estimated free-flow speed for local conditions or other effects that contribute to a reduction in free-flow speed.

The CAF is used to adjust the capacity of a facility for reduced-capacity situations or to match field measurements. The capacity can be reduced to represent situations such as construction and maintenance activities, adverse weather, traffic incidents, and vehicle breakdowns.

The SAF and CAF can be used to adjust for driver familiarity (or unfamiliarity) with the facility. Additionally, these adjustment factors are used to calibrate a roadway to existing conditions. For the Generalized Service Volume Tables analysis, an SAF of 0.975 and a CAF of 0.968 was assumed for all analyses and area types. These values are derived from the HCM 6th Edition.

5.9. Percent Turns from Exclusive Turn Lanes

Percent turns from exclusive turn lanes is the percent of vehicles approaching an intersection served by an exclusive turn lane or lanes. More specifically, the percent left turns is the percentage of vehicles performing a left-turning movement at a signalized intersection, and the percent right turns is the percentage of vehicles performing a right-turning movement at a signalized intersection. Typically, the percent turns from an exclusive lane is the percent of traffic using an exclusive left-turn lane, with traffic predominantly moving straight ahead.

Some of the most complicated calculations within the HCM chapter on signalized intersections deal with accommodating left-turn movements. **The Generalized Service Volume Tables assume that left-turn lanes adequately serve left-turning vehicles.** In other words, the base condition assumes there is no queue spillback from the left-turn lane into the adjacent through lanes. If this assumption cannot be made, results obtained from the planning analysis tools are possibly inaccurate. For these reasons and more, the tables should not be used for intersection design or detailed traffic operations analysis.

The automobile LOS methodology described in this Q/LOS Handbook applies the HCM procedures to through traffic at each signalized intersection. Turning movement adjustments are made internally, based on the user-specified value of percent turns from exclusive lanes. Turning volumes are added to the through volumes to determine the overall service volumes shown in the Generalized Service Volume Tables.

The accuracy of LOS calculations is highly dependent on the percent turns from exclusive turn lanes. Although it is typically of moderate importance, at some key intersections, it may be one of the most significant variables. While FDOT does not routinely suggest acquiring percent turns from exclusive turn lanes, data collection should be considered at key intersections. Furthermore, some FDOT districts may require specific counts. If the percent turns at key intersections are obtained in the field, a value of 10 percent may be assumed for the other intersections, assuming an exclusive left-turn lane and no exclusive right-turn lane. If the percentage of turns from exclusive turn lanes is acquired, the turning movement count should be conducted during the peak hour, as illustrated in **Table 5-1**.

Table 5-1: Calculation of Percent Turns from Exclusive Turn Lanes

Measured Day	Peak Hour	Signalized Intersection	Total Peak Hour Predominant Approach Volume	Exclusive Lane Volume	% Turns from Exclusive Turn Lanes	
					A	B
22-Jan	4-5 PM	A	884	130	14.7%	16.7%
		B	900	150		
23-Jan	5-6 PM	A	1,152	150	13.0%	13.0%
		B	1,150	150		
24-Jan	5-6 PM	A	1,102	150	13.6%	14.7%
		B	1,090	160		
Totals	–	A	3,138	430	13.7%	14.6%
		B	3,140	460		

SPECIAL TURNING MOVEMENT CASES

There are two special cases when dealing with turns from exclusive lanes. The first is when the predominant movement is a turn movement instead of the straight-ahead movement. The second involves T intersections.

In **Figure 5-1**, the predominant movement is the left-turning movement, and the 550 vehicles turning left should be considered the through movement.The 200 vehicles going straight ahead should be treated as left-turning vehicles with 20 percent left turns [(200/(550 + 200 + 250)] from an exclusive left-turn lane. The 250 vehicles turning right should be treated normally, with 25 percent right turns [(250/(550 + 200 + 250)] from an exclusive right-turn lane.

In **Figure 5-2**, all vehicles are turning from exclusive turn lanes at a T intersection. The 600 vehicles turning right is the predominant movement and should be considered through vehicles. The 400 vehicles turning left should be treated normally, which is to say there are 40 percent left-turns [400/(400 + 600)] from an exclusive left-turn lane.

In **Figure 5-3**, another T intersection is shown, featuring a shared left/through lane in addition to the predominant movement served by the exclusive right lane. Normally, a shared left/through lane does not have the same capacity as a through lane because of the effect of opposing vehicles blocking permitted left turns for the main movement. However, in this case, there is no opposing movement, and the capacity of this shared lane is virtually the same as a typical through lane. In this situation, an analyst should assume one through lane and one shared through lane with 20 percent left turns [(200/(200 + 200 + 600].

Figure 5-1: Predominant Turning Movement

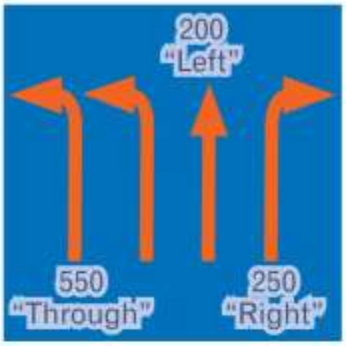


Figure 5-2: Through Movement at a T Intersection with Exclusive Lanes

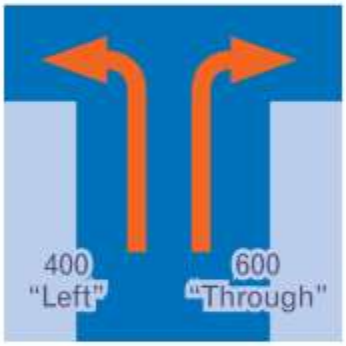
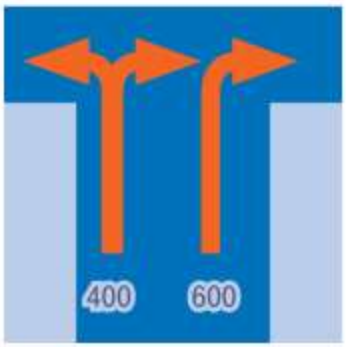


Figure 5-3: Through Movement at a T Intersection with Shared Lanes



6 Control Variables

This chapter provides an overview of each control variable used to generate the Generalized Service Volume Tables.

Control variables refer to roadway or area traffic controls and regulations in effect for a roadway point or segment, including the type, phasing, and timing of traffic signals, stop signs, lane use and turn controls, and other similar measures. In this Q/LOS Handbook, control variables refer to those regularly occurring at signalized intersections, unless otherwise noted. For uninterrupted flow facilities, such as freeways and highways, the LOS can readily be derived from the volume of vehicles and roadway capacity, and control variables are not applicable. For signalized roadways (interrupted flow), however, v/c is not sufficient to determine the LOS, and control variables must be considered. These include:

- Number of signals
- Arrival type
- Cycle length
- Effective green ratio (g/C)

The Generalized Service Volume Tables use default control variables that are representative of typical conditions on Florida roadways. The default control variables (or characteristics) — along with the roadway, traffic, and multimodal variables assumed in the creation of each table — are provided on the back of the Generalized Service Volume Tables.

Table 6-1 provides an overview of the control variable input requirements within the Generalized Service Volume Tables.

Table 6-1: Control Variable Input Requirements

	Input Variable	Generalized Service Volume Tables
CONTROL	Number of Signals	D
	Arrival Type	D
	Signal Type	D
	Cycle Length (C)	D
	Through Effective Green Ratio (g/C)	D
	Exclusive Left Effective Green Ratio	D

Legend: D Default variables that cannot be altered

The effects that individual variables have on the computational process vary. **Table 6-2** indicates the sensitivity of the control variables on capacity and LOS.

Table 6-2: Sensitivity of Control Variables on Service Volumes

Control Variable	Sensitivity on Service Volumes
Number of Signals	high
Arrival Type	medium
Signal Type	low
Cycle Length (C)	medium
Through Effective Green Ratio (g/C)	high
Exclusive Left Effective Green Ratio	medium

Traffic variables, including AADT, Standard K, and D data, should be obtained from FDOT's FTO, PTF Handbook and field counts. Although turning movement counts at key intersections may be necessary, as discussed previously, FDOT does not recommend the use of travel time studies for LOS planning applications.

Field visits should be conducted to collect traffic and other items needed for analyses. Up-to-date aerial or satellite imagery may be sufficient for most of the data entry items. Signalization information is often available from the applicable traffic operations agency's signal timing plans. The applicable transit agency should be contacted for transit data.

6.1. Number of Signals

The cumulative effect of numerous traffic signals, lack of green time, and lack of effective signal progression often have a detrimental effect on the LOS of arterials. An important feature of FDOT's Generalized Service Volume Tables is the inclusion of the number of signals on the determination of the LOS.

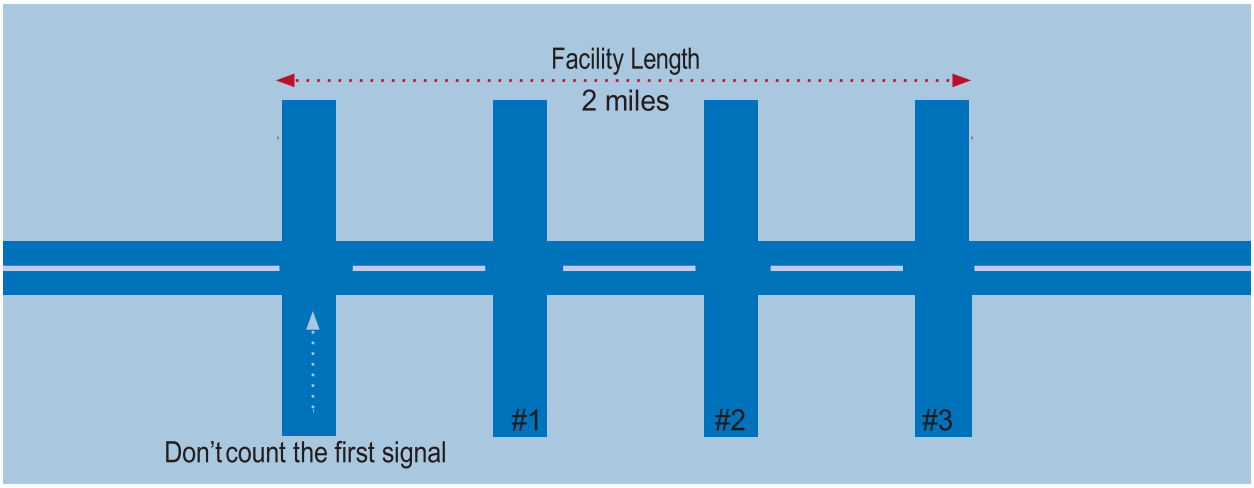
The distance between signalized intersections is required to determine specific service volumes for a roadway. FDOT's Generalized Service Volume Tables use signalized intersections per mile as an input and assume uniform spacing. While this approach may be acceptable for an areawide analysis, precise distances between signalized intersections should be determined when an individual roadway is analyzed at the conceptual planning level.

For analysis purposes, 100 feet between signalized intersections is considered the minimum distance. When the actual distance is less than 100 feet (e.g., side streets with wide medians), it is reasonable to consider these together as one signalized intersection.

Roadway and traffic characteristics often change over time. The number of signals per mile is frequently the most significant change. As development takes place and an area becomes more urbanized, the number of signals per mile is likely to increase. The LOS analysis of future conditions should, therefore, take into account changes in roadway and signalization characteristics.

To avoid double counting when determining the number of signals, only one intersection at the ends of the facility should be counted, as shown in **Figure 6-1**. In general, FDOT recommends including the last intersection within the analysis and ignoring the first, or entry, intersection. This allows the analysis to include the effects of delay, backup, and the LOS from the last intersection for the facility under study.

Figure 6-1: Total Number of Signals



For example, in southeast Florida, principal arterials are often spaced 1 mile apart, with other signalized intersections in between. In this situation, only one of the signalized intersections at the ends of the roadway, plus the signals in between, should be counted when determining the number of signals per mile. In general, the last signalized intersection in the peak flow direction would be counted, ignoring the first signalized intersection.

As discussed previously, the arterial should begin and end at a signalized intersection. In unusual situations when this assumption is not applicable (e.g., lane drops, ramp junctions, etc.), the following guidance is provided:

- For the Generalized Service Volume Tables, do not count the unsignalized terminus as a signalized intersection.

In general, only fixed, periodic interruptions should be considered in determining the number of signals. Only one intersection at the ends of the facility should be counted. Draw bridges, at-grade railroad crossings, school zones, pedestrian crossings, and median openings should not be counted. Depending on the site-specific conditions or analysis desired, there may be exceptions to this general guidance.

When using the Generalized Service Volume Tables, an intersection with a stop sign for the through movement is considered a signalized intersection for a state-signalized arterial. When analyzing a Non-State signalized roadway, the roadway must have at least one signalized intersection.

6.2. Arrival Type

Arrival type is a general categorization of the quality of signal progression. The HCM defines six arrival types, with Type 1 representing the worst progression quality and Type 6 representing the best. Uncoordinated operation, or random arrivals, is represented by Type 3 and is appropriate for actuated signals. Arrival Type 4 is FDOT's default for coordinated signal systems. A more favorable progression (Types 5 or 6) may be appropriate when progression design strongly favors the peak direction of travel, and all signals are coordinated for the length of the facility. One-way facilities tend to have better quality progression than two-way facilities. A higher level of progression may also be appropriate around freeway interchanges, where signals are typically highly coordinated. The arrival type may vary significantly from one signal to the next, even in coordinated signal systems. Actuated-coordinated signals have varying green times, with breaks between groups of coordinated signals.

The assumption of very good progression in one direction does not imply efficient progression in the other direction. Even with less traffic volume, off-peak direction speeds could be lower, if favorable progression has been established for the peak direction only.

6.3. Signal Type

The signal type indicates the degree to which a traffic signal's cycle length, phase plan, and phase times are preset or actuated. The three main types are:

- Actuated
- Actuated-coordinated
- Pretimed

It should be noted that modern traffic signals can handle multiple settings and can vary by time of day. Consequently, a traffic signal's operation (actuated, coordinated-actuated, or pretimed) can change by the time of day to best meet traffic demands.

6.3.1. Actuated

Actuated, or fully actuated signals, use vehicle detection for all signal phases on the main and side street approaches. Each phase is subject to a minimum and maximum green time, and some phases may be skipped if there is no demand for the phase. The length of the green time observed in the field generally depends on the amount of vehicular demand for the phase. If there is little demand, then a relatively short green time will be allocated to the phase. If there is significant demand, a relatively long green time will be allocated, subject to the maximum green time for that phase. The minimum and maximum green times for each phase can be easily changed by entering new values into the traffic signal controller.

Because phases can be skipped, and the amount of green time for each phase generally depends on demand, the cycle length will often vary substantially from cycle to cycle. The exception occurs during periods of heavy vehicular demand, when all phases consistently reach their maximum values, making it seem as if the cycle length is fixed. Actuated signal operations are most frequently used when the signalized intersection is isolated, or when there is a desire to minimize delay without concern for progression.

6.3.2. Actuated-Coordinated

A subset of actuated control is referred to as actuated-coordinated control. **In this type of signal operation, the cycle length is typically fixed, while the amount of green time for the main street through phase varies.** It consists of a minimum amount of green time plus any unused time from the minor phases. Holding the main street green in this manner at all of the signals along a facility allows platoons of vehicles to move relatively unimpeded along the main street with decent progression. Actuated-coordinated signal operations are typically used in Florida's developed areas, especially during peak travel times. This type of operation typically offers the best balance of capacity and progression for the main street through movement.

6.3.3. Pretimed

Pretimed signals use a preset sequence of phase times in a repetitive order and make no use of vehicle detection. Each phase is green for a fixed period of time, irrespective of vehicular demand, and none of

the phases can be skipped. Thus, the cycle length is fixed. This type of signal operation is most frequently used in downtown areas with high signal density, or when the desire is to maximize progression without extensive concern about maximizing capacity for the through movement.

6.4. Cycle Length (C)

Cycle length (C) is the total time for a signal to complete a sequence of signal indications for all traffic movements. The cycle lengths used in the development of the arterial service volume tables were based on representative cycle lengths for different functional classifications of arterials and for different area types. Cycle lengths are typically highest on principal arterials in urbanized areas, where the primary purpose of the facility is to provide a high level of mobility to through movements on the mainline and where roadways are typically at or near capacity during peak periods. Lower cycle lengths are typically used for the less saturated conditions typical of rural areas to provide better access and service to all directions. The cycle lengths used to develop the Generalized Service Volume Tables are provided on the back of each table.

6.5. Effective Green Ratio (g/C)

One of the most significant variables used in calculating the highway capacity and LOS on a signalized roadway is the through movement's effective green time (g) to signal cycle length ratio (g/C). It is the amount of time allocated for the through movement (typically calculated as the green plus yellow plus all-red indication times less the lost time) divided by C. Along with the number of through lanes, it is usually one of the two most important factors for determining the capacity of a roadway's through movement at any given intersection and for the roadway as a whole. Despite this, for generalized analyses, g/C is often ignored, because:

- g/C ratio typically varies from intersection to intersection along an arterial
- g/C ratio typically varies by time of day

Ignoring g/C undermines any arterial LOS analysis at a generalized planning level. This Handbook includes guidance to provide default g/Cs for generalized planning arterial analyses.

A major simplifying assumption that is essential to the development of the Generalized Service Volume Tables is the selection of one g/C for all intersections on an arterial. The g/C ratio of 0.44 was used for arterial analysis for all area types. FDOT has determined that for generalized planning analyses, the weighted average g/C ratio yields the closest results to actual conditions. **The weighted g/C ratio of an arterial is the average of the critical intersection through movement g/C ratio and the average of all the other intersections through movement g/C ratios for urban streets.** For example, if there are four signals with a through g/C ratio of 0.50 and one signal with a through g/C ratio of 0.40, then the weighted average g/C ratio for urban street is 0.45 (Refer to HCM for additional information). Essentially, the worst intersection is given equal weight to all the other intersections combined.

As an example, for the through movement phase, G is the green displayed time, Y the yellow displayed time (typically 3 or 4 seconds), R the all-red indication (typically 1 or 2 seconds), and C the cycle length. The most representative situation in Florida is for cycles to consist of four phases and 12 indications: one phase each to accommodate the main road through movement, the side road left movement, the side road through movement, and the main road left movement, with G, Y, and R indications for each of the four phases. The effective green time, which includes the effects of vehicular startup and clearance lost times is g.

FDOT's preferred approach for g/C determination for current year analyses is to use the actual signal timing plan from the traffic operations agency for the p.m. peak hour (typically 5–6 p.m.) for each signalized intersection. This is a consistent and cost-effective approach that provides reasonable accuracy. If the signal is actuated, (G + 4)/C should be used for the through movement. This assumes the typical Y + R time of 4 seconds as additional time allocated to the through movement as a result of unused time from the other movements. If the signal is pretimed, the g/C for the through movement should be used.

For consistency and ease of review, FDOT recommends using signal timing plans from the applicable traffic operations agency.

Analysts should be aware that signal timing plans come in a variety of forms, use many notations, and are not designed to directly address the determination of g/C. It may be necessary to coordinate with the operating agency directly to interpret the output values.

Analysts should calculate and input g/C for the through movement at all intersections. The g/C for left turning movements need only be collected at major intersections. A 10 percent value can be assumed as the left g/C for other intersections.

In previous FDOT guidance, FDOT offered two other methods for determining g/C:

- actual signal timings from the traffic operations agency
- field studies

Both approaches have some merit; however, after FDOT analyzed and tested both approaches, the preferred approach of using signal timing plans in general offers the best combination of consistency, accuracy, and cost-effectiveness. The use of field studies for g/C is discouraged, unless an early agreement by the affected parties is reached. The maximum acceptable facility through movement g/C ratios during the peak hour typically should not exceed:

- State principal arterials
  - Current year: 0.50
  - Long term (≥ 10 years out): 0.47
- Other roadways: 0.44

Under most circumstances, arterial facilities are 1.5–5.0 miles in length and include principal arterials as terminus points. The g/C value of 0.50 approximates FDOT's maximum allowable arterial capacity volumes of 1,000 vehicles per hour per lane (vphpl) and 950 vphpl in large urbanized areas and other urbanized areas, respectively.

7 Multimodal Variables

This chapter provides an overview of each multimodal variable used within Generalized Service Volume Tables to allow the user to recognize these variations and analyze multimodal LOS on specific roadways. Where applicable, generally acceptable ranges are provided. Multimodal variables describe the various geometric and demand characteristics that are needed to determine pedestrian, bicycle, and bus LOS. As with the control variables, multimodal variables are only applicable for arterial analyses:

- Paved shoulder/bicycle lane
- Outside lane width
- Pavement condition
- Sidewalk
- Sidewalk/roadway separation
- Sidewalk protective barrier
- Bus frequency
- Bus stop amenities
- Bus stop type
- Passenger loads

Table 7-1 provides an overview of the multimodal variable input requirements within the Generalized Service Volume Tables.

Table 7-1: Multimodal Variable Input Requirements

Input Variable	Generalized Service Volume Tables
Paved Shoulder/Bicycle Lane	R
Outside Lane Width	D
Pavement Condition	D
Sidewalk	R
Sidewalk/Roadway Separation	D
Sidewalk/Roadway Protective Barrier	D
Bus Frequency	R
Bus Stop Amenities	D
Bus Stop Type	D
Passenger Loads	D

Legend: R Required table input
D Default cannot be altered

The effects that individual variables have on the computational process vary. **Table 7-2** indicates the sensitivity of the multimodal variables on the capacity and LOS.

Table 7-2: Sensitivity of Multimodal Variables on Service Volumes

Control Variable	Sensitivity on Service Volumes
Paved Shoulder/Bicycle Lane	high
Outside Lane Width	low
Pavement Condition	low
Sidewalk	high
Sidewalk/Roadway Separation	medium
Sidewalk/Roadway Protective Barrier	medium
Bus Frequency	high
Bus Stop Amenities	low
Bus Stop Type	low
Passenger Loads	low

7.1. Paved Shoulder/Bicycle Lane

Within this Q/LOS Handbook, a bicycle lane is a designated or undesignated (paved shoulder) portion of a roadway for bicycles adjacent to vehicle lanes. Painted lines separate paved shoulders/bicycle lanes from vehicle lanes.

For planning purposes, a designated bicycle lane is usually 4 to 5 feet in width and has a bicycle logo. An undesignated bicycle lane is usually 4 feet in width and does not have a bicycle logo. To be considered a paved shoulder/bicycle lane, at least 3 feet of paved shoulder must exist outside the painted line. Facilities with striped shoulders between 1 and 3 feet should be considered as having wide outside lane widths.

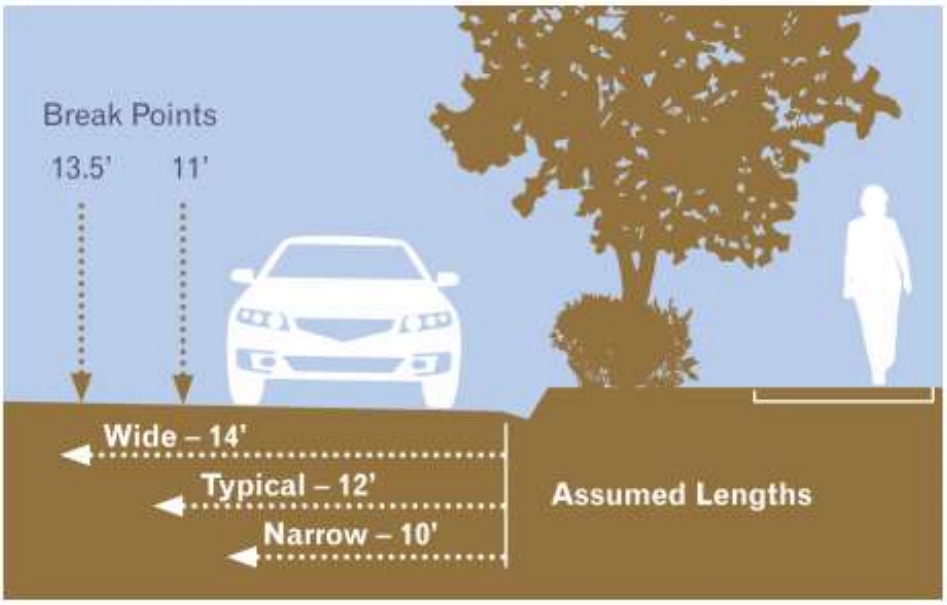
7.2. Outside Lane Width

Within this Q/LOS Handbook, **the outside lane width is the width, in feet, of a roadway's outside vehicle through lane, not including the gutter.** This factor is usually important in the determination of a roadway's BLOS. The majority of the SHS lane widths are 12 feet. Many local roads and some state highways have 14-foot outside lanes; these are sometimes referred to as wide curb lanes. Many other local roads and some state facilities have outside lane widths less than 12 feet.

These dimensions as shown in **Figure 7-1,** are for planning analyses only:

- Wide: greater than or equal to 13.5 feet.
- Typical: greater than or equal to 11 feet and less than 13.5 feet.
- Narrow: less than 11 feet.

Figure 7-1: Outside Lane Width



7.3. Pavement Condition

Pavement condition for BLOS analysis is a general classification of the roadway surface where bicycling usually occurs, not necessarily that drivers of vehicles experience. Three general classifications are used: desirable, typical, and undesirable. These general classifications are used in lieu of detailed pavement surface grades found in the operational model on which this planning technique is based.

- Desirable pavement condition is new or recently resurfaced pavement. The pavement still maintains a dark black color, is free of cracks, and rides smoothly.
- Typical pavement condition is the most common type of pavement condition of Florida's roadways and is used in the Generalized Service Volume Tables. Generally, the pavement has a light gray color, the surface appears worn, and may have some cracks; however, the ride for the bicyclist is smooth.
- Undesirable pavement condition consists of pavement with noticeable cracks, broken pavement, or ruts. There may be existing or partially filled potholes, or drainage grates hazardous to bicycles. When the bicycle riding surface contains loose dirt, gravel, or debris, even if the roadway surface is typical or desirable, then it would be considered undesirable.

In general, FDOT recommends the use of a typical pavement condition for most analyses, especially those involving future years.

For analysts familiar with FHWA's PAVECON factors, "desirable" would equate to a 4.5 or 5.0 rating, "typical" would equate to a 3.0 to 4.0 rating, and "undesirable" would equate to 2.5 or less.

7.4. Sidewalk

Within this Q/LOS Handbook, a sidewalk is a paved walkway for pedestrians at the side of a roadway, typically 5 feet in width. Paved roadway shoulders are not considered sidewalks. Because LOS analyses are directional, the existence of a sidewalk is based on the directional side of the arterial being analyzed.

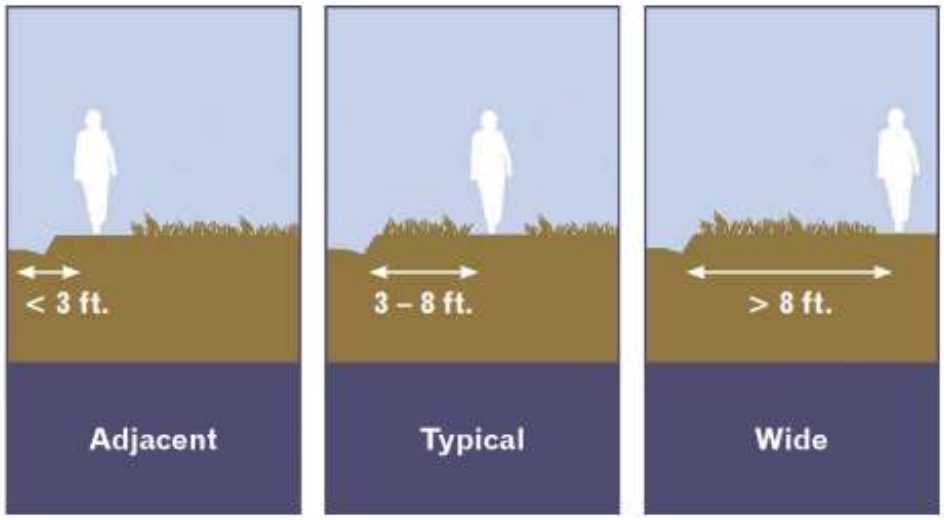
SIDEWALK/ROADWAY SEPARATION

Sidewalk/roadway separation is the lateral distance in feet from the outside edge of pavement to the inside edge of the sidewalk. Within this Q/LOS Handbook, sidewalk/roadway separation is classified in three ways, as shown in **Figure 7-2**:

- Adjacent: less than or equal to 3.0 feet
- Typical: greater than 3.0 feet and less than or equal to 8.0 feet
- Wide: greater than 8.0 feet

In general, pedestrians tend to walk toward the outer half of sidewalks, away from traffic.

Figure 7-2: Sidewalk/Roadway Separation



In downtown environments, sidewalks frequently extend at least 10-12 feet from the curb. When there are no tree plantings or other sidewalk/roadway protective barriers, sidewalks should be classified as adjacent. When there are tree plantings or some other barrier between where people walk and the outside edge of the travel lane, sidewalks are assumed to have typical separation.

When on-street parking and sidewalks both exist, the sidewalk/roadway separation should be considered wide, regardless of how close the sidewalk is to the edge of the pavement. Essentially, on-street parking adds approximately 8 additional feet between pedestrians and vehicles.

7.5. Sidewalk Protective Barrier

In addition to sidewalk width, this Q/LOS Handbook adds an overall sidewalk protective barrier factor to include the added benefits of trees, on-street parking, or other barriers.

7.6. Bus Frequency

Bus frequency, also known as headway, refers to the number of scheduled, fixed-route buses that have a potential to stop on a given roadway segment in one direction of flow in a one-hour time period. Express buses with no potential of stopping along a roadway are not included.

7.7. Bus Stop Amenities

The bus stop is often the first component of any transit system a passenger will encounter, and available amenities for comfort or safety can greatly influence the perceived QOS along a route. Rather than quantify all potential bus stop components, this Q/LOS Handbook creates four categories of bus stop amenities: excellent, good, fair, and poor. Having shelter from the weather and a place to sit is the most desirable condition at any bus stop, regardless of type, and is considered an excellent condition. A shelter without a bench represents a good condition, because rain, wind, and sun could otherwise deter choice riders. A stop with only a bench is less desirable than a stop with only a shelter and is considered a fair condition. A stop with no bench and no shelter is considered a poor condition. Because excellent bus stops may improve a user's perception of the system, the bus stop amenity factor is used to increase the adjusted bus frequency value. Bus stops with no amenities are uninviting and discourage use, and the variable is, therefore, used to decrease the adjusted bus frequency value, as shown in **Table 7-3**.

Table 7-3: Bus Stop Amenity Factors

Bus Stop Amenities	Adjustment Factor
Excellent	1.1
Good	1.0
Fair	1.0
Poor	0.9

7.8. Bus Stop Type

Bus travel speed depends not only on distances and congestion along the route, but also the number of stops and the dwell time at each stop. Typical bus stops delay a bus for around 15 seconds, while major stations with numerous boardings and alightings can add around 35 seconds of delay.

7.9. Passenger Loads

Just as traffic congestion contributes to the degradation of the LOS, crowding on buses can affect the QOS. Because overcrowded buses may reduce the overall desirability of a route, a passenger load factor is used to modify the adjusted bus frequency value, as shown in **Table 7-4**.

Table 7-4: Passenger Load Factor

Passenger Load Factor	Adjustment Factor
< 30%	1.05
< 70%	1.00
≤ 100%	0.95
> 100%	0.85

8 Future Year Analyses

Traffic and development conditions change on roadways over time. This raises questions about what input values, analysis tools, and LOS targets should be used for capacity and LOS analyses in future years. Analysis years and planning horizons vary appreciably in transportation planning. To help with understanding and for simplification in this text, **"long term" means 10 or more years from the current year, and "short term" means less than 10 years from the current year.** However, for a specific application, FDOT district LOS coordinators should be consulted for more detailed guidance.

For future year analyses, it is important to consider changes in the appropriate roadway, traffic volumes, land use, signal control, and multimodal characteristics. For example, under existing conditions in a transitioning area, signalization may be very infrequent; however, as development occurs, more signalized intersections can be anticipated and should be accounted for in future year capacity and LOS analyses. The traffic and control variables relevant to this handbook are discussed in the following sections. Refer to the FDOT PTF Handbook and the Traffic Analysis Handbook for further guidance on future year traffic development and analyses.

8.1. Change in Traffic Variables

8.1.1. AADT

Historical growth trends and the state's travel demand forecasting models are typically used for long-term traffic projections. Analysts and reviewers of capacity and LOS analyses need to agree on what future AADT values to use. Additional information can be found in the PTF Handbook.

For site impact analyses, volumes are frequently presented in terms of trips generated by the site rather than roadway-specific AADT, K, and D values. Institute of Transportation Engineer's (ITE's) Trip Generation Handbook is typically used for trip generation for site impact analyses; however, FDOT should be consulted about supplemental material. In all cases, care should be given to ensure final values are compatible with statewide Standard K and D factors.

8.1.2. Planning Analysis Hour Factor (K)

As areas become more developed, measured K values often drop, primarily for two reasons. The first is that more urban situations typically are not subject to highly volatile volumes, such as holiday traffic in rural areas. Generally, more developed areas are subject to frequent recurring volumes, such as weekday commuter traffic. The second is that as congestion develops, the spreading of the peak travel hour traffic also occurs. Refer to FDOT PTF Handbook for Standard K values used by facility type.

For future year generalized planning analyses, the Standard K values for the assumed area and facility types on the backs of FDOT's Generalized Service Volume Tables are appropriate. In the longer term, it may be necessary to determine if the area is projected to transition into a different area type over the analysis period.

8.1.3. Directional Distribution Factor (D)

For future year generalized planning analyses performed in this handbook, the D factor value for all area

and facility types is 0.55. If a site-specific analysis is conducted in the short term, FDOT's preferred approach is to use the FDOT's 200th Highest Hour Traffic Count Report from the FTO Web Application. In the longer term, some lowering of the factor may be appropriate. The analyst should refer to the D factors and their acceptable range in FDOT PTF Handbook.

8.2. Change in Control Variables

Making traffic and roadway projections into the future is a well-accepted practice for generalized planning analysis. For reasonable generalized planning analysis of signalized roadways, control variables must be addressed in the short and long terms. **Typically, the two most important control variables are the through movement g/C and signal density.**

8.2.1 g/C

Determining current and future g/Cs for a roadway is complicated, and judgments must be made. In the short and long terms:

- For Class II arterials, using the existing g/Cs is appropriate
- For Class I arterials not subject to significant development pressure, using the existing g/Cs is appropriate
- For Class I arterials incurring significant new development pressure, it is appropriate to lower through movement g/Cs
- For new individual signals, through movement g/Cs will vary greatly; however, for planning purposes, none should be assumed to be higher than 0.55

Within the HCS, an acceptable method to estimate future g/C ratios is by conducting intersection capacity analyses. The HCS will determine the required g/C ratios to progress through traffic movements on the major street, while simultaneously minimizing the delay to the minor street approaches.

8.2.2 Signal Density

As areas grow in population, additional traffic signals are frequently installed. Usually, these new signals do not significantly affect the capacity of roadways, unless they are in a previously undeveloped area or are so closely spaced that queue spillback occurs. They can play a major role in the determination of the LOS if stops occur more frequently and average travel speeds drop.

In short- and long-term analyses, it is appropriate to consider the probability of new traffic signals, especially based on proposed new developments. In the absence of specific development plans or intersecting traffic volume cross-product signalization criteria, general guidance should be used in developed areas.

In the short term:

- For Class II arterials, using the existing signalized intersection locations is appropriate
- For Class I arterials not subject to significant development pressure, using the existing signalized intersection locations is appropriate
- For Class I arterials incurring significant new development pressure, one additional signalized intersection per mile may be assumed

In the long term:

- For Class II arterials, one additional signalized intersection per mile may be assumed
- For Class I in small towns, one additional signalized intersection per mile may be assumed

Because of the wide variety of circumstances along generally uninterrupted flow highways in rural areas, no specific guidance can be given on future signal locations. However, for capacity and LOS purposes, the possibility of new signalized intersections should be considered. Because of the importance of signal density on the LOS on state roadways, for site impact applications, the number of new signals should be reviewed and approved by the FDOT district prior to use in an analysis.

Typically, other roadway, traffic, control, and multimodal variables do not have as large of an effect on the capacity and LOS as the ones addressed above. If some of these other inputs (e.g., turning movement percentages) were determined in a current year analysis, they can usually be applied to future year analysis. If these other variables were not determined for a current year analysis, the statewide default values on the backs of the Generalized Service Volume Tables may be assumed.

9 Maximum Capacity Volumes

The use of highway capacity and LOS analysis, whether applied appropriately or not, has resulted in projected traffic volumes beyond normal capacity ranges found on Florida facilities. There are multiple reasons for this, but to aid analysts and reviewers on what capacity values will normally be acceptable, FDOT has adopted a set of general guidelines. The values provided below are based on site-specific freeway studies and counts, as well as arterial maximum acceptable g/C ratios.

9.1. Arterials

For arterials, the maximum generally acceptable per-lane approach volumes are:

- Large urbanized: 1,000 vehicles per hour per lane (vphpl)
- Other urbanized: 950 vphpl
- Transitioning: 920 vphpl
- Urban: 920 vphpl
- Rural: 850 vphpl

The Maximum volumes may vary due to widely varying g/C, turning movements at intersections, and the segmentation of roadways. The maximum volumes represent a weighted g/C of approximately 0.50, which is the average of the critical g/C and the average of all other g/Cs along an urban street facility. Typically, there will be at least one principal arterial intersecting an urban street being analyzed. Such intersections are usually the critical intersections (hot spots) for an arterial analysis, and g/C ratios for the through movements are in the range of about 0.40. Although these intersections are frequently flared out to achieve greater capacity, the through movement g/C ratios cannot increase appreciably if all intersection movements are included. Therefore, the use of a 0.50 g/C ratio for determining the capacity of an urban street should represent the upper bounds of what can be reasonably expected.

Arterial facility analyses typically involve intersecting principal arterials, but section analyses may not have intersecting principal arterials. Under these circumstances, urban street through movements during peak travel hours may feature g/C ratios in the 0.50 to 0.60 range. Such values may be appropriate for segment or section analyses; however, the use of such high g/C ratios is not normally acceptable for a facility analysis and may represent an inappropriate segmentation of roadways.

Another situation in which g/C ratios may be above 0.50 is in the outlying parts of urbanized areas or in transitioning areas for both arterials and generally uninterrupted flow highways. In these areas, signals have typically been recently installed, and side traffic has not yet reached the high levels that it will in future years. Therefore, although current maximum volumes per lane may be higher than those shown above, in the future, such values will likely not be sustained and should be avoided in the arterial analysis.

9.2. Freeways

For freeway facilities and sections, the maximum volumes at 70 mph free flow speed are 2,400 pcphpl as per HCM.

Freeway operational measures such as ramp metering may result in higher volumes.

In general, the implementation of ramp metering could have a 5 percent or less improvement on capacity.

9.3. Highways

For highway segments (generally uninterrupted flow highways), the maximum per-lane approach volumes as per HCM are:

- Two-lane
  - Developed: 1,700 pcphpl
  - Undeveloped: 1,700 pcphpl
- Multilane
  - Developed (55 mph free flow speed): 2,100 pcphpl
  - Undeveloped (60 mph free flow speed): 2,200 pcphpl

10 Florida's LOS Policy

REQUIREMENTS FOR LOS TARGETS FOR THE STATE HIGHWAY SYSTEM

It is FDOT's intent to plan, design, and operate the SHS at an acceptable LOS for the traveling public. The LOS targets are consistent with FDOT's Policy on Level of Service Targets for the SHS, Topic No. 000-525-006. The policy outlines the automobile mode LOS target for urbanized areas and outside urbanized areas. The automobile mode LOS targets for the SHS during peak travel hours are D in urbanized areas and C outside urbanized areas. FDOT shall work with local governments to establish appropriate LOS targets for multimodal mobility and system design. The targets shall be responsive to all users, for context, roadway function, network design, and user safety.

11 Generalized Planning Analysis

11.1. Introduction

FDOT's Generalized Service Volume Tables found at the end of this Q/LOS Handbook are the primary analysis tool in conducting this type of planning analysis. **Although considered a good generalized planning tool, the Generalized Service Volume Tables are not detailed enough for project development and environment (PD&E) traffic analysis, final design, or operational analysis work, and should not be used for those purposes.** In addition, the Generalized Service Volume Tables cannot be relied upon when approaching LOS E and LOS F thresholds, because of operational fluctuations at the thresholds. More detailed analysis should be performed in these situations.

Specific applications of the Generalized Service Volume Tables include:

- Generalized comprehensive plan amendment analyses
- Statewide highway system deficiencies and needs
- Statewide mobility performance measure reporting
- Areawide baseline capacity (e.g., MPO boundaries) and service volume values for travel demand forecasting models
- Areawide influence areas (e.g., impact areas) for major developments
- Future year analyses (e.g., SIS Needs Plans, MPO LRTPs which have a 10 to 25-year planning horizon)
- Baseline capacity and service volumes for concurrency management systems

Generalized Service Volume Tables must be appropriately applied using the right area type and facility type designations and interpreted selecting the right values from the tables. The adjustment factors must be applied, as applicable.

It is quite possible that no single roadway has the exact values for all the roadway, traffic volumes, land use, signal control, and multimodal variables used in the Generalized Service Volume Tables. The tables must be applied with care to roadway facilities and in the determination of the LOS grade.

The automobile, bicycle, and pedestrian parts of the Generalized Service Volume Tables were developed based on the definitions and methodology of the HCM. Nationally the TCQSM is the comparable document to the HCM for bus analyses.

FDOT's Generalized Service Volume Tables consist of five area types grouped into three tables:

- Urbanized areas
- Areas transitioning into urbanized/urban areas, or cities with population of more than 5,000 not in urbanized areas
- Rural undeveloped areas, or cities and developed areas with population of less than 5,000

Most planning applications begin with AADT volumes given as an input, or end with AADT as a calculated output. Therefore, the generalized daily service volumes shown in Tables 1 through 3 depict the AADT based on a standard peak hour. Some local and regional entities have adopted two-direction peak hour standards.

Tables 4 through 6 provide generalized peak hour two-way service volumes. Generalized peak hour directional volumes (Tables 7 through 9) are provided, because traffic engineering analyses are conducted on an hourly directional basis. These hourly directional tables may be viewed as the most fundamental of the tables, because the two-way tables are simply the peak hour directional values divided by D, and the daily tables are simply the peak hour directional values divided by the D and K factors.

All three sets of tables are internally consistent. All of the volumes within the tables are based on the Standard K factors. The urban/transitioning freeways are based on the average of urbanized and rural Standard K factors. The PHFs of 0.95, 0.92, and 0.88 were used in the creation of the urbanized, transitioning/urban, and rural tables, respectively. The 200th highest hour for the directional distribution variable is approximately equivalent to the typical peak hour of a day during a peak season in a developed area. Again, it is stressed that the daily, peak hour two-way, and peak hour directional tables are internally consistent and based on the same time period and directional flow of traffic.

The input values used to generate the Generalized Service Volume Tables can be found on the backs of Tables 1 through 9 and yield the results on the fronts of the Tables.

The Generalized Service Volume Tables present maximum service volumes, or the highest numbers of vehicles, for a given LOS. Any number greater than the value shown for a roadway with a given number of lanes would drop the LOS to the next letter grade.

The Generalized Service Volume Tables should not be referred to as capacity tables. In general, the values shown are the maximum service volumes for a given LOS based on roadway, traffic, control, and multimodal conditions during the peak hour in the peak travel direction. Whereas the maximum service volume deals with the highest number of vehicles for a given LOS, capacity deals with the maximum number of vehicles or persons that can pass a point during a specified time period under prevailing roadway, traffic, and control conditions. Many of the LOS E service volumes in the hourly directional tables also represent the capacity of the roadway, but in general, most of the values do not reflect a roadway's capacity.

A clear case of not representing capacity values is the daily tables. Roadway capacities for the day far exceed the volumes shown in the daily tables. All roadways are underutilized in the early morning hours and many heavily congested roads will have volumes higher than the highest volumes shown in the daily tables, because traffic is backed up for more than a one-hour time period.

Another case of not representing capacity is the arterial LOS E service volumes. **The primary criterion for the LOS on arterials is the average travel speed, not the capacity of the roadway.** The average travel speed along arterials is made of many control variables (e.g., progression, cycle length), not just the capacity (i.e., v/c ratios) of signalized intersections. Only in the special case of when the capacity of signalized intersections controls how many vehicles can pass through the intersections does capacity essentially dictate the lowest acceptable average travel speeds along arterials.

FDOT's Generalized Service Volume Tables are:

- Annual Average Daily Service Volume Tables
  - Table 1: urbanized areas
  - Table 2: transitioning into urbanized areas or urban areas

  - Table 3: rural undeveloped or rural developed areas
- Peak hour two-way service volume
  - Table 4: urbanized areas
  - Table 5: transitioning into urbanized areas or urban areas
  - Table 6: rural undeveloped or rural developed areas
- Peak hour directional service volume tables
  - Table 7: urbanized areas
  - Table 8: transitioning into urbanized areas or urban areas
  - Table 9: rural undeveloped or rural developed areas

11.2. Special Cases

The volumes in the Generalized Service Volume Tables should be considered as average volumes over the facility under analysis.

For example: If a 4-mile facility has AADT counts of:

- Segment 1 - 23,000
- Segment 2 - 22,000
- Segment 3 - 25,000
- Segment 4 - 23,000 and
- Segment 5 - 27,000

FDOT recommends the use of the average value 24,000 for comparison to the tables to determine the LOS.

The use of the average volume works reasonably well, unless there is one segment that has a widely disparate value, in which case a median value may be more appropriate.

11.2.1. Mid-Block Considerations

In general, Q/LOS analyses for interrupted flow facilities primarily focus on signalized intersections. The majority of motorist aggravation is generally attributable to delay, which primarily occurs at signalized intersections on arterials. Therefore, when using the Generalized Service Volume Tables, the number of lanes for arterials and other interrupted flow facilities should be determined at major intersections rather than mid-block.

Travelers place a greater emphasis on mid-block considerations while traveling on uninterrupted flow facilities and non-automobile modes. **For example, on two-lane highways in rural undeveloped areas, the LOS is largely determined by the ability to pass other vehicles.** For freeways, most travelers are concerned about the operation of the whole facility and not the operation of particular interchanges. For bicycle and pedestrian movements, the BLOS and PLOS models are calibrated for mid-block conditions. For bus LOS, the emphasis is on the ability to travel by bus over the length of facility, with less importance placed on individual intersections. Therefore, in general, the number of lanes for these situations reflect mid-block considerations.

11.2.2. Non-State Signalized Roadways Adjustment

The primary purpose of this Q/LOS Handbook is to compute the LOS for state facilities. However, the Generalized Service Volume Tables are structured and are reasonably well-suited to local governments that desire to use them to evaluate roads under local jurisdiction. A feature of the urbanized and transitioning/urban Generalized Service Volume Tables is that Non-State roadways are addressed. The only types of roadways not addressed in the tables are unsignalized local streets and unpaved roads.

The mere fact that roadways are operated and maintained by different governmental entities has no effect on the capacity or LOS of the roadways. **However, in general, Non-State roadways have lower capacities and service volumes than state facilities, because they have lower green times at signalized intersections.** The Generalized Service Volume Tables contain a 10 percent adjustment factor for Non-State roadways.

The HCM LOS criteria address arterials rather than collectors or local streets. FDOT considers it appropriate for local governments to decide how to analyze collectors.

Uninterrupted flow facilities are analyzed the same, regardless of whether they are state facilities or not.

11.2.3. Variations in Levels of Service

Higher Q/LOS for the automobile, bicycle, and pedestrian modes may not be achieved, even with extremely low traffic volumes, given the default values used in the Generalized Service Volume Tables. In the case of automobiles, the higher Q/LOS cannot be achieved primarily because the control characteristics simply will not allow vehicles to attain relatively high average travel speeds. In the case of bicycles and pedestrians, it is primarily caused by the lack of facilities serving those modes. The tables have adequate footnotes to reflect this unachievable concept.

Lower Q/LOS for the automobile, bicycle, and pedestrian modes may not be applicable, even with extremely high traffic volumes, given the default values used in the Generalized Service Volume Tables. In the case of automobiles, the lower Q/LOS are not applicable, primarily because the control characteristics do not allow enough vehicles to pass through an intersection in an hour. If vehicles could get through the intersection, they could obtain the applicable LOS speed threshold, but there is not enough capacity at the intersection to let them pass through.

In the case of bicycles and pedestrians, it is primarily caused by the existence of facilities adequately serving those modes. For example, if a sidewalk exists, it is very difficult to establish a set of conditions in which the LOS to the pedestrian is F.

Essentially, once the maximum service volume is reached, the next LOS grade is F. For example, in Service Volume Table 1 for multilane Class I arterials, if demand volumes are greater than the LOS D threshold, then the LOS is F, and if the volume is at the LOS D threshold, the LOS is D; essentially, LOS E does not exist.

11.2.4. Median and Turn Lane Adjustment (Divided/Undivided Roadways)

For simplicity, the Generalized Service Volume Tables have factors to adjust for the effects of mid-block medians and exclusive turn lanes at intersections. The cumulative effects of medians and exclusive turn lanes from common

occurrences are shown in the Generalized Service Volume Tables.

A median has the effect of changing the adjusted saturation flow rate or service volume by 5 percent. In Florida, most two-lane roadways do not have a median (e.g., a two-way left turn lane), so the tables assume no median for those facilities. However, if there is a median, appropriate service volumes should be increased 5 percent. Most multilane arterials and highways in Florida have medians, so the tables are set up to assume medians for those facilities. However, if there is no median, appropriate service volumes should be decreased 5 percent.

Most major roadways in Florida have exclusive left-turn lanes at intersections, except those with very low volumes. **If a roadway does not have left-turn lanes at major intersections, its service volume drops 20 to 25 percent, depending on the number of lanes, as indicated in the table.** The common design practice in Florida is to use shared through/right-turn lanes to accommodate right-turning vehicles. However, exclusive right-turn lanes have large capacity and service volume impacts for vehicles at major intersections.

11.2.5. One-Way Facility Adjustments

For simplicity, the urbanized and transitioning/urban area Generalized Service Volume Tables have an intuitive factor for the effects of one-way streets on vehicles. **Essentially, one-way pairs are assumed to have a 20 percent higher service volumes than corresponding two-way roadways with the same number of lanes.**

However, the Generalized Service Volume Tables treat each facility of a one-way pair separately. To account for that, the volumes in the daily and hourly two-way Tables 1 through 6 should be multiplied by 0.6, while the volumes in the hourly directional Tables 7 through 9 should be multiplied by 1.2, to obtain the correct volume and LOS.

For example, the AADT LOS D threshold for a 2-lane Class I arterial one-way facility in a transitioning area would be 9,720. This example is calculated using the Generalized Service Volume Table 2. The AADT LOS D threshold for a 2-lane Class I arterial in a transitioning area is 16,200. To calculate the LOS D threshold for a one-way facility, multiply 16,200 by the one-way facility adjustment, 0.6, to calculate the one-way facility LOS D threshold of 9,720.

11.2.6. Auxiliary Lane Adjustment

Freeway auxiliary lanes (lanes connecting on- and off-ramps) usually have significant capacity and LOS benefits. The values contained in the tables indicate their importance in a general way. To apply the values, simply add the volume shown in the freeway adjustment to the maximum service volume shown in the table.

11.2.7. Ramp Metering Adjustment

Freeway ramp metering has the benefit of smoothing out traffic demand entering a freeway during peak travel times. This benefit is reflected by increasing the service volumes shown on the tables by 5 percent.

11.2.8. Bicycle LOS (BLOS)

The bicycle portions of the Generalized Service Volume Tables make primary use of the two most important factors in determining the LOS for bicyclists: the existence of paved shoulders/bicycle lanes and vehicle volumes. **It is important to note that the volumes shown in the tables are not the number of bicyclists; rather, they are the number of vehicles in the outside lane.** Unlike automobile LOS, which is highly dependent on the number

of other vehicles on the roadway, **BLOS is not determined by how many other bicyclists are on road; rather, it is primarily determined by the bicycle accommodations on the roadway and volume of vehicles.**

The other factor used in the Generalized Service Volume Tables is the volume of vehicles in the outside lane. For analysis purposes, vehicle volumes are assumed to be equally spread across the number of directional roadway lanes. Unlike the automobile entries in the table, in which the number of lanes is an entry into the tables, a step of multiplying the volume by the number of lanes is needed to use the volume (hourly directional, hourly two-way, or daily) of vehicles. For example, in Table 7, the LOS C threshold for zero percent bicycle lane coverage is 150 vehicles for the outside lane. If the roadway has four lanes, then the 150 vehicles would be multiplied by 2 (number of directional lanes) to determine the maximum volume of vehicles for BLOS C in one direction of flow. The additional step was included to simplify the appearance of the tables and save space.

11.2.9. Pedestrian LOS (PLOS)

The pedestrian portions of the Generalized Service Volume Tables make primary use of the two most important factors in determining the LOS for pedestrians: the existence of a sidewalk and vehicle volumes. It is important to note that the volumes shown in the tables are not the number of pedestrians; rather, they are the number of vehicles in the outside lane. Unlike automobile LOS, which is highly dependent on the number of other vehicles on the roadway, PLOS is not determined by how many other pedestrians use the facility; rather, it is primarily determined by the presence of sidewalks and the volume of vehicles.

The other factor used in these tables is the volume of vehicles in the outside lane. For analysis purposes, vehicle volumes are assumed to be equally spread across the number of directional roadway lanes. Unlike the automobile entries in the table, in which the number of lanes is an entry into the tables, a step of multiplying the vehicle volume by the number of lanes is needed to use the volume (hourly directional, hourly nondirectional, or daily) of vehicles. For example, in Table 7, the LOS C threshold for 100 percent sidewalk coverage is 540 vehicles for the outside lane. If the roadway has four lanes, then the 540 vehicles would be multiplied by 2 (number of directional lanes) to determine the maximum volume of vehicles for PLOS C in one direction of flow. The additional step was included to simplify the appearance of the tables and save space.

All techniques in this Q/LOS Handbook are based on a directional analysis. For example, in the case of evaluating the automobile LOS on arterials, the LOS is for the peak directional flow, and the LOS for the off-peak direction could be higher, lower, or the same. This directional technique results in some unique perspectives when evaluating PLOS. Sidewalks, whether on one or both sides of a road, serve pedestrians in both directions, unlike facilities for the other modes. Furthermore, analysts should be especially careful when using the Generalized Service Volume Tables for determining PLOS when there is a sidewalk only on one side of the roadway. Because all the Generalized Service Volume Tables are based on peak hour directional analyses, PLOS based on the tables should be considered applicable only to the direction of the peak flow of traffic. When using the tables, there is typically a difference of two LOS grades if the sidewalk is, or is not, on the same side of roadway as the peak flow of traffic. Generally, having sidewalks on both sides of arterials in developed areas is considered desirable; yet, the Generalized Service Volume Tables do not adequately reflect that concept.

11.2.10. Bus LOS

The bus portions of the Generalized Service Volume Tables are primarily dependent on bus frequency,

which is the number of scheduled fixed-route buses that have a potential to stop in a given segment in the peak direction of flow in a one-hour time period. That measure is supplemented by pedestrian accessibility. In the Generalized Service Volume Tables, pedestrian accessibility is represented by two broad ranges of sidewalk coverage.

There are two unique aspects of bus mode entries of the Generalized Service Volume Tables. First, it is important to note that the volumes shown in the tables are the number of buses per hour. Unlike automobile, bicycle, and PLOS thresholds, the bus mode LOS thresholds are not related to the number of vehicles on the roadway. Second, regardless of the table used, all numbers are shown in terms of buses per hour for the peak hour in the peak direction. Thus, even in the daily urbanized table (Table 1), the threshold values shown are still in terms of peak hour directional buses.

11.3. Service Volume Calculation Process

All service volumes and resulting tables are first calculated for the peak hour in the peak direction. The peak hour two-way values are obtained by dividing the peak hour peak direction service volumes by D. The daily volumes are obtained by dividing the peak hour two-way service volumes by K.

Peak hour directional and peak hour two-way service volumes are rounded to the nearest 10 vehicles. Daily service volumes are rounded to the nearest 100 vehicles.

11.3.1. Arterial LOS

For the automobile mode, arterial analyses starts with a volume of 10 vph and then calculates the v/c ratio at each intersection. Then, the speed on each segment is calculated, which also accounts for the signal delay and the overall average speed for the facility. The average speed is checked against the average speed criterion for LOS A. If the speed is below the LOS A threshold, the volume is incremented by either 50 vph (if the difference in the actual speed and LOS threshold speed is large) or 10 vph (if the difference in actual speed and LOS threshold speed is small). This process is repeated until the average facility speed is approximately equal to the LOS A threshold. The volume level at which this occurs is the service volume for LOS A. The volume (i.e., LOS A service volume) is then incremented by 10 vph and incrementally increased until the average facility speed is approximately equal to the LOS B threshold speed. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation is stopped. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades.

For the bicycle and pedestrian modes, again the analyses is started with a volume of 10 vph and then BLOS and PLOS scores are calculated based on the BLOS and PLOS models. Then, that score is checked against the LOS A criterion. If the score is below the LOS A threshold value, the volume is incremented by 10 vph. This process is repeated until the facility score is approximately equal to the LOS A threshold. The volume level at which this occurs is then the service volume for LOS A. The volume (i.e., LOS A service volume) is then incremented by 10 vph and incrementally increased until the average facility score is approximately equal to the LOS B threshold volume. This process repeats for LOS C, D, and E. If at any point during this process the vehicle v/c ratio exceeds 1.0 for the full hour, the calculation is stopped. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time as well as for the lower Q/LOS grades.

For the bus mode, the LOS service frequency criteria that appear in the TCQSM is used, modified by PLOS, relative auto speed, bus stop amenities, and passenger load factors.

11.3.2. Freeway Facilities LOS

For freeways, the HCS7 freeway facilities module was used to obtain the service volume thresholds. The automobile volume is incrementally increased until the demand flow rate to the mean speed of the traffic stream produces an average facility density that is approximately equal to the LOS A threshold. The volume level at which this occurs is the service volume for LOS A. The volume (i.e., LOS A service volume) is then incrementally increased by 10 vph and until the average facility density is approximately equal to the LOS B threshold speed. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation stops. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades. The traffic factors and other inputs such as CAF and SAF used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables.

11.3.3. Highways LOS

For multilane uninterrupted flow highways, HCS7's multilane highways procedure starts with a volume of 10 vph and then calculates density. If the density is below the LOS A threshold density, the volume is incremented by 10 vph. This process is repeated until the average density is approximately equal to the LOS A threshold. The volume level at which this occurs is then the service volume for LOS A. The volume (i.e., LOS A service volume) is then increased by 10 vph until the average facility density is approximately equal to the LOS B threshold density. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation stops. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades. The traffic factors and other inputs such as CAF and SAF used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables. A different free flow speed is used in the analyses for multilane uninterrupted flow highways passing through undeveloped areas and developed areas.

For two-lane uninterrupted flow highways, the computational process is similar to the process followed for multilane uninterrupted flow highways. The HCS7's two-lane highways module is dependent on the highway class (I, II, or III). The traffic factors and other inputs used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables. A different free flow speed is used in the analyses for two-lane uninterrupted flow highways passing through undeveloped areas and developed areas.

Glossary

Acceleration lane	A freeway lane extending from the on-ramp gore to where its taper ends.
Accessibility	The dimension of mobility that addresses the ease in which travelers can engage in desired activities.
Actuated control	All approaches to the signalized intersection have vehicle detectors, with each phase subject to a minimum and maximum green time, and some phases may be skipped if no vehicle is detected. Same as *actuated* and *fully actuated control*.
Actuated-Coordinated control	The fixed-cycle signal control of an intersection in which the through movement on the designated main roadway gets the unused green time from side movements because of limited or no vehicle activation from side movements. Same as *coordinated-actuated*.
Add-on/drop-off lanes	The roadway lanes added before an intersection and dropped after the intersection. Same as *expanded intersections*.
Adjusted saturation flow rate	In this Q/LOS Handbook, the base saturation flow rate times the effect of many roadway variables and traffic variables.
Adjustment factor	In the Generalized Service Volume Tables: additive or multiplicative factors to adjust service volumes.
All-way stop control	An intersection with a stop sign at all approaches.
Annual average daily traffic	The volume passing a point or segment of a roadway in both directions for one year, divided by the number of days in the year.
Areawide analysis	An evaluation within a geographic boundary.
Arrival type	A general categorization of the quality of signal progression.
Arterial	A signalized roadway that primarily serves through traffic with average signalized intersection spacing of 2 miles or less; a type of roadway based on FDOT's functional classification.
Auxiliary lane	An additional lane on a freeway connecting an on-ramp of one interchange to the off-ramp of the downstream interchange.
Average daily traffic	The total traffic volume during a given time period (more than a day and less than a year) divided by the number of days in that time period.
Average travel speed	The facility length divided by the average travel time of all vehicles traversing the facility, including all stopped delay times.
Axle correction factors	The adjustment factors used to calculate the annual average daily traffic by compensating for an axle counter's tendency to count more vehicles than are present.
Base conditions	The best possible characteristic in terms of capacity for a given type of facility.

Base saturation flow rate	The maximum steady flow rate, expressed in passenger cars per hour per lane, at which passenger cars can cross a point on interrupted flow roadways.
Basic segment	In this Q/LOS Handbook, the length of a freeway in which operations are unaffected by interchanges. Same as *basic freeway segment*.
Basic two-lane highway Segments	A highway segment upstream of the intersection influence area and downstream of the affected downstream highway segment, and thus not affected by signalized intersections.
Bicycle lane	In this Q/LOS Handbook, a designated or undesignated portion of roadway for bicycles adjacent to vehicle lanes.
Bicycle level of service score	A numerical value calculated by the BLOS Model that corresponds to a BLOS.
Bus frequency	The number of buses per hour serving one direction of a roadway facility.
Bus stop	An area where bus passengers wait for, board, alight, and transfer.
Bus stop amenities	Enhancements for comfort or safety that can greatly influence the perceived QOS along a route. Four categories of bus stop amenities exist: excellent, good, fair, and poor.
Bus stop amenity factors	Factors used to determine the adjusted bus frequency value by applying a factor commensurate to the quality of bus stop amenities.
Bus stop type adjustment factors	Factors that adjust travel times along bus routes by adding 15 to 35 seconds of delay per route for typical and major bus stops, respectively.
Capacity	The maximum sustainable flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of roadway during a given time period under prevailing conditions. As typically used in this Q/LOS Handbook, the maximum number of vehicles that can pass a point in one hour under prevailing roadway, traffic and control conditions.
Capacity adjustment factor	An adjustment factor used in the HCS7 freeways and multilane highways module to adjust the capacity of a facility for reduced capacity situations or to match field measurements. The capacity can be reduced to represent incident situations, such as construction and maintenance activities, adverse weather, traffic incidents, and vehicle breakdowns.
Capacity constrained	A condition in which traffic *demand* exceeds the capacity of a roadway.
Capacity utilization	The dimension of mobility that addresses the quantity of operations relative to capacity.
Captive rider	A transit rider who is limited by circumstances to use transit as a primary source of transportation.
Choice rider	A transit rider who chooses to take transit over other readily available transportation options.
Class I arterial	A roadway that has posted speeds of 40 mph or higher.

Class II arterial	A roadway that has posted speeds of 35 mph or less.
Collector	A roadway providing land access and traffic circulation with residential, commercial and industrial areas.
Concurrency	A systematic process utilized by local governments to ensure new development does not occur unless adequate infrastructure is in place to support growth.
Context classification	A classification assigned to a roadway that broadly identifies the various built environments in Florida, based on existing or future land use characteristics, development patterns, and the roadway connectivity of an area.
Control delay	The component of delay that results when a signal causes traffic to reduce speed or stop.
Control variables	The parameters associated with roadway controls.
Core freeways	The major, non-toll freeways going through the urbanized core areas of the largest metropolitan areas, such as Interstate 4 in Orlando. FDOT has adopted lower K values for these freeways to represent a peak period, as opposed to a peak hour analysis. The lower K values affect daily service volumes only in the Generalized Service Volume Tables.
Critical signalized intersection	The signalized intersection with the lowest volume-to-capacity ratio (v/c), typically the one with the lowest effective green ratio (g/C) for the through movement. Same as *critical signalized intersection*.
Cycle length	The time it takes a traffic signal to go through one complete sequence of signal indications.
Deceleration lane	A freeway lane extending from the taper to the off-ramp gore.
Delay	The additional travel time experienced by a traveler.
Demand	The number of persons or vehicles desiring service on a roadway. Same as *demand traffic*.
Density	The number of vehicles, averaged over time, occupying a given length of lane or roadway; usually expressed as vehicles per mile or vehicles per mile per lane.
Developed areas	All areas not rural undeveloped. Same as rural developed areas.
Directional distribution factor	The proportion of an hour's total volume occurring in the higher volume direction.
Effective green ratio	Typically in this Q/LOS Handbook, the ratio of the effective green time (g) for the through movement at a signal intersection to its cycle length (C).
Effective green time	The time allocated for the through movement to proceed; calculated as the through movement green plus yellow plus all-red indication times less the lost time.
Exclusive left-turn storage length	The total amount of storage length, in feet, for exclusive left-turn lanes.
Exclusive right-turn lanes	A storage area designated to only accommodate right-turning vehicles.

Exclusive turn lane	A storage area designated to only accommodate left- or right-turning vehicles; in this Q/LOS Handbook, the turn lane must be long enough to accommodate enough turning vehicles to allow the free flow of the through movement.
Five-lane section	A roadway with four through lanes, two in each direction, separated by a two-way left turn lane; in the Generalized Service Volume Tables, a five-lane section is treated as a roadway with four lanes and a median.
Flow rate	In this Q/LOS Handbook, the equivalent hourly rate at which vehicles pass a point on a roadway for a 15-minute period.
Free flow speed	In this Q/LOS Handbook, the average speed of vehicles under low-flow traffic conditions and not under the influence of signals, stop signs, or other fixed causes of interruption, generally assumed to be 5 mph over the posted speed limit.
Freeway	A multilane, divided highway with at least two lanes for the exclusive use of traffic in each direction and full control of ingress and egress.
Freeway segment	In this Q/LOS Handbook, a basic segment, interchange or toll plaza.
FSUTMS	Florida Standard Urban Transportation Model Structure; Florida's software that forecasts travel demand.
Functional classification	The assignment of roads into systems according to the character of service they provide in relation to the total road network.
Generalized Service Volume Tables	Maximum service volumes based on areawide roadway, traffic, and control variables and presented in tabular form.
Generalized planning	A broad type of planning application that includes statewide analyses, initial problem identification, and future year analyses. In this Q/LOS Handbook, typically performed by using the Generalized Service Volume Tables.
Gore	The point located immediately between the left edge of a ramp pavement and the right edge of the roadway pavement at a merge or diverge area.
Headway	The time, in seconds, between two successive vehicles as they pass a point on a roadway.
Heavy vehicle	An FHWA vehicle classification of 4 or higher; essentially, vehicles with more than 4 wheels touching the pavement during normal operation.
Heavy vehicle factor	The adjustment factor for heavy vehicles.
Heavy vehicle percent	The percentage of heavy vehicles in the traffic stream.
Highway capacity analysis	An examination of the maximum of vehicles or persons that can reasonably be expected to pass a point on a roadway during a specified time period under prevailing roadway, traffic, and control conditions. Same as *capacity analysis*.
Highway Capacity Manual	The Transportation Research Board's document on highway capacity and QOS.
Highway Capacity Software 7	Software that replicates the HCM, Sixth Edition.

Interchange	In this Q/LOS Handbook, the influence area associated with the off-ramp influence area, overpass/underpass, and on-ramp influence area of a connection to a freeway. Same as *freeway interchange influence area*.
Interrupted flow	A category of roadways characterized by signals, stop signs, or other fixed causes of periodic delay or interruption to the traffic stream, with average spacing less than or equal to 2.0 miles.
Intersection influence area	In this Q/LOS Handbook, a segment of an uninterrupted flow highway influenced by an isolated intersection.
Interval	A period of time in which all traffic signal indications remain constant.
Isolated intersection	An intersection occurring along an uninterrupted flow highway.
Large urbanized area	A Metropolitan Planning Organization urbanized area greater than 1 million in population; in Florida, these seven areas consist of the following central cities: Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach.
Lateral clearance	Clearance distance from edges of outside lanes to fixed obstructions.
Level of service	A quantitative stratification of the QOS to a typical traveler of a service or facility into six letter-grade levels, with A describing the highest quality and F describing the lowest quality; a discrete stratification of a QOS continuum.
Level of service targets	The same as the statewide minimum LOS targets for the State Highway System.
Load factor	The ratio of passengers actually carried to the total passenger capacity of a bus.
Local adjustment factor	In the 2013 Q/LOS Handbook, an adjustment factor FDOT used to adjust base saturation flow rates or base capacities to better match actual Florida traffic volumes; mostly consisted of a driver population factor and an area type factor.
Maximum service volume	The highest number of vehicles for a given LOS.
Median	In this Q/LOS Handbook, areas at least 10 feet wide that are restrictive or non-restrictive, which separate opposing-direction mid-block traffic lanes and, on arterials, contain turn lanes that allow left-turning vehicles to exit from the through traffic lanes.
Median type	A classification of roadway medians as restrictive, non-restrictive, or no median.
Mid-block	In this Q/LOS Handbook, the part of a roadway between two signalized intersections.
Mobility	The movement of people and goods.
Mode	A method of travel; in this Q/LOS Handbook, either automobile, bus, bicycle, or pedestrian.
Motorized mode	A method of travel by automobile or bus.

MPO/TPO	Metropolitan/Transportation Planning Organization.
Multilane highway	A nonfreeway roadway with two or more lanes in each direction and, although occasional interruptions to flow at signalized intersections may exist, is generally uninterrupted flow.
Multimodal	In this Q/LOS Handbook, more than one mode.
Multimodal Transportation District	An area in which secondary priority is given to vehicle mobility, and primary priority is given to ensuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit (F.S. 163.3180[15]).
No passing zone	In this Q/LOS Handbook, a segment of a two-lane highway along which passing is prohibited in the analysis direction.
Non-restrictive median	A painted, at-grade area separating opposing mid-block traffic lanes.
Non-State signalized roadway	A signalized roadway not on the State Highway System.
Number of effective lanes	In terms of capacity, the equivalent number of through lanes. Typically, the number is expressed as a fraction (e.g., 2.7) to reflect the partial beneficial effects of freeway auxiliary lanes or arterial add-on/drop-off lanes.
Number of through lanes	The number of lanes relevant to an analysis of a roadway's LOS. FOR ARTERIALS ■ Usually at the signalized intersection, not mid-block ■ Usually through and shared right-turn lanes ■ Maybe a fractional number reflecting add-on/drop-off lanes or other special lane utilization considerations ■ Using the Generalized Service Volume Tables, the number at major signalized intersections FOR FREEWAYS AND UNINTERRUPTED FLOW HIGHWAYS ■ Does not include auxiliary lanes between two points ■ Usually the predominant number of through lanes between two points
Off-ramp influence area	The geographic limits affecting the capacity of a freeway associated with traffic exiting a freeway. Same as *diverge area*.
On-ramp influence area	The geographic limits affecting the capacity of a freeway associated with traffic entering a freeway. Same as *merge area*.
One-way	A type of roadway in which vehicles are allowed to move in only one direction.
Operational analysis	A detailed analysis of a roadway's present or future LOS, as opposed to a generalized planning.
Other urbanized area	A Metropolitan Planning Organization urbanized area with less than 1 million in population.
Oversaturated	A traffic condition in which demand exceeds capacity.
Passenger load factors	Factors used to determine the adjusted bus frequency value by applying a factor commensurate to the level of passenger crowding.

Passing lane	A lane added to provide passing opportunities in one direction of travel on a two-lane highway. Two-way left-turn lanes are not considered passing lanes.
Paved shoulder/bicycle lane	In this Q/LOS Handbook, pavement at least 3 feet in width separated by a solid pavement marking from the outside vehicle through lane to the edge of the pavement.
Peak direction	The course of the higher flow of traffic.
Peak hour	In this Q/LOS Handbook, a one-hour time period with high volume.
Peak hour factor	The ratio of the hourly volume to the peak 15-minute flow rate for that hour; specifically, hourly volume/(4 x peak 15-minute volume).
Peak period	A multi-hour analysis period with high volume; peak periods rather than peak hours are typically used for the analysis of core freeways or roadways within a Multimodal Transportation District.
Peak season	The 13 consecutive weeks with the highest daily volumes for an area.
Peak season weekday average daily traffic	The average daily traffic for Monday through Friday during the peak season.
Pedestrian	An individual traveling on foot and other non-motorized modes such as skateboards, scooters and both motorized and non-motorized wheelchairs.
Pedestrian accessibility	In this Q/LOS Handbook, the ease in which a pedestrian can reach a bus stop.
Pedestrian LOS Model	The operational methodology from which this Q/LOS Handbook's pedestrian Q/LOS analyses are based.
Pedestrian level of service score	A numerical value calculated by the PLOS Model that corresponds to a PLOS.
Pedestrian/sidewalk/roadway separation	The lateral distance, in feet, from the outer edge of the pavement to where a pedestrian walks on a sidewalk.
Percent time spent following	The average percent of total travel time that vehicles must travel in platoons behind slower vehicles because of the inability to pass on a two-lane highway.
Performance measure	A qualitative or quantitative factor used to evaluate a particular aspect of travel quality.
Person flow	The capacity on uninterrupted and interrupted flow facilities, defined in terms of persons per hour.
Phase	The part of a traffic signal's cycle allocated to any combination of traffic movements receiving the right of way simultaneously during one or more intervals.
Planning analysis hour factor	The ratio of the traffic volume in the study hour to the annual average daily traffic.
Planning horizon	A time period, typically 20 years, applicable to the analysis of a project, roadway or service.
Platoon	A group of vehicles traveling together as a group, either voluntarily or

	involuntarily because of signal control, geometrics, or other factors.
Point	A boundary between links. In this Q/LOS Handbook, usually a signalized intersection, but maybe other places where modal users enter, leave, or cross a facility, or roadway characteristics change.
Posted speed	The maximum speed at which vehicles are legally allowed to travel over a roadway segment.
Pretimed control	Traffic signal control in which the cycle length, phase plan, and phase times are preset and repeated continuously, according to a preset plan.
Prevailing conditions	Existing circumstances that primarily include roadway, traffic, and control conditions, but may also include weather, construction, incidents, lighting, and area type.
Principal arterial	A signalized roadway that primarily serves through traffic between centers of metropolitan areas and provides a high degree of mobility. In this Q/LOS Handbook, principal arterials have approximately one signal every half mile and a posted speed limit of 50 mph.
Quality of service	A traveler-based perception of how well a service or facility is operating.
Quality/level of service	A combination of the broad QOS and more detailed LOS concepts.
Queue spillback	When a link's queue of vehicles extends to upstream links.
Ramp overlap segment	The length for which the upstream on-ramp influence area and the downstream off-ramp influence area overlap.
Restrictive median	A raised or grassed area that restricts crossing movements.
Roadway	A general categorization of an open way for persons and vehicles to traverse; in this Q/LOS Handbook, it encompasses streets, arterials, freeways, highways, and other facilities.
Roadway class	The categories of two-lane highways; two-lane highways are primarily grouped by area type. Same as *class*.
Roadway variables	The parameters associated with roadways. Also known as *roadway characteristics*.
Rolling terrain	A combination of horizontal and vertical alignments causing heavy vehicles to reduce their running speeds substantially below that of passenger cars, but not to operate at crawl speeds for a significant amount of time.
Route	As used in the TCQSM, a designated, specified path to which a bus is assigned.
Route segment	As used in the TCQSM, a portion of a bus route ranging from two stops to the entire length of the route.
Running speed	The distance a vehicle travels divided by the travel time the vehicle is in motion.
Rural area	In the Generalized Service Volume Tables, areas that are not

	urbanized areas, transitioning areas, or urban areas.
Rural developed areas	The portions of rural areas that are along coastal roadways or in generally populated areas with a population of less than 5,000.
Rural undeveloped areas	Portions of rural areas with no or minimal population or development.
Scheduled fixed route	In this Q/LOS Handbook, bus service provided on a repetitive, fixed-schedule basis along a specific route, with buses stopping to pick up and deliver passengers to specific locations.
Seasonal adjustment factor	A factor used to adjust for the variation in traffic over the course of a year.
Section	A group of consecutive segments that have similar roadway characteristics, traffic characteristics and, as appropriate, control characteristics for a mode of travel. A characteristic describing laneage (e.g., three-lane section, five-lane section, seven-lane section).
Segment	A portion of a facility defined by two boundary points; usually the length of roadway from one signalized intersection to the next signalized intersection.
Service measure	A specific performance measure used to assign a LOS to a set of operating conditions for a transportation facility or service.
Service volume table	Maximum service volumes based on roadway, traffic and control variables and presented in tabular form.
Seven-lane section	A roadway with six through lanes, three in each direction separated by a two-way left-turn lane; in the Generalized Service Volume Tables, a seven-lane section is treated as a roadway with six lanes and a median.
Shared lane	A roadway lane shared by two or three traffic movements; in Florida, a shared lane usually serves through and right-turning traffic movements.
Sidewalk	A paved walkway for pedestrians at the side of a roadway.
Sidewalk/roadway protective barrier	Physical barriers separating pedestrians on sidewalks and vehicles.
Sidewalk/roadway separation	The lateral distance in feet from the outside edge of the pavement to the inside edge of the sidewalk.
Signal	In this Q/LOS Handbook, a traffic control device regulating the flow of traffic with green, yellow, and red indications. A traffic control device that routinely stops vehicles during the study period; excluded from this definition are flashing yellow lights, railroad crossings, draw bridges, yield signs, and other control devices.
Signal density	The number of signals intersections per mile.
Signal type	The kind of traffic signal (actuated, pretimed or coordinated-actuated) with respect to the way its cycle length, phase plan, and phase times are operated.

Signalized intersection	A place where two roadways cross and have a signal controlling traffic movements.
Signalized intersection spacing	The distance between signalized intersections.
Simple average	An average that gives equal weight to each component.
Speed	In this Q/LOS Handbook, the same as average travel speed, unless specifically noted.
Speed adjustment factor	An adjustment factor in HCS 7's freeways and multilane highways module, used to adjust the speed of a facility to account for the effects of adverse weather and construction work zones. The SAF also may be used to calibrate estimates of free-flow speed for local conditions or other effects that contribute to a reduction in free-flow speed.
Standard K	FDOT's standard peak hour to annual average daily traffic ratio (K), based on a roadway's characteristics (facility type) and location (area type). Values of less than 9 percent essentially represent a multi-hour peak period rather than a peak hour.
State Highway System	All roadways that FDOT operates and maintains; the State Highway System consists of the Florida Intrastate Highway System and other state roads.
Stochastic	A description of a type of model that incorporates variability and uncertainty into analysis.
Strategic Intermodal System	Florida's system of transportation facilities and services of statewide and interregional significance.
Termini	In this Q/LOS Handbook, the beginning and endpoints of a facility.
Three-lane section	A roadway with two through lanes separated by a two-way left-turn lane. In the Generalized Service Volume Tables, a three-lane section is treated as a roadway with two lanes and a median. An exclusive passing lane on a two-lane highway is not considered a three-lane section.
Threshold	The breakpoints between LOS differentiations.
Threshold delay	The additional travel time represented by the difference between the time associated with a roadway's generally accepted speed (LOS D threshold in urbanized areas and LOS C threshold in nonurbanized areas) and average travel speed. Same as LOS threshold delay.
Through movement	In this Q/LOS Handbook, the traffic stream with the greatest number of vehicles passing directly through a point. Typically, this is the straight-ahead movement, but occasionally it may be a turning movement.
Traffic demand	The number of vehicles with drivers who desire to traverse a particular highway during a specified time period.
Traffic volume	The number of vehicles passing a point on a highway during a specified time period.
Transit	In this Q/LOS Handbook, the same as *bus*.

Transit Capacity and Quality of Service Manual (TCQSM)	The document and operational methodology from which this Q/LOS Handbook's bus Q/LOS analyses are based.
Transitioning area	An area adjacent to an urbanized area that exhibits characteristics between rural and urbanized/urban, and will be urbanized in the next 20 years.
Transportation planning boundaries	Precisely defined lines that delineate geographic areas. These boundaries are used throughout transportation planning in Florida. Their mapping is described in Urban Boundaries and Functional Classification of Roadways FDOT's Procedure Topic No. 525-020-311.
Travel time	The average time spent by vehicles traversing a roadway.
Two-lane highway	A roadway with one lane in each direction on which passing maneuvers must be made in the opposing lane and, although occasional interruptions to flow at signalized intersections may exist, is generally uninterrupted flow.
Two-way	Movement allowed in either direction.
Two-way left-turn lane	A lane that simultaneously serves left-turning vehicles traveling in opposite directions. Same as continuous left-turn lane.
Two-way stop control	The type of traffic control at an intersection where drivers on the minor street, or a driver turning left from the major street, wait for a gap in major-street traffic to complete a maneuver.
Undesignated bicycle lane	A lane, usually 4 feet in width, that does not contain a bicycle logo.
Undivided	As used in the Generalized Service Volume Tables, a roadway with no median.
Uninterrupted flow	A category of roadway not characterized by signals, stop signs, or other fixed causes of periodic delay or interruption to traffic stream.
Uninterrupted flow highway	A nonfreeway roadway that generally has uninterrupted flow, with average signalized intersection spacing of greater than 2.0 miles; a two-lane highway or a multilane highway.
Urban area	A place with a population between 5,000 and 50,000 and not in an urbanized area. The applicable boundary includes the census' urban area and the surrounding geographical area agreed on by the FDOT, the local government, and the FHWA. The boundaries are commonly called FHWA Urban Area Boundaries and include areas expected to develop medium density before the next decennial census.

Urbanized area	An area within a Metropolitan Planning Organization's (MPO) designated urbanized area boundary. The minimum population for an urbanized area is 50,000 people. Based on the census, any area the U.S. Bureau of Census designates as urbanized, together with any surrounding geographical area agreed on by the FDOT, the relevant MPO, and the FHWA, commonly called the FHWA Urbanized Area Boundary.
Volume-to-capacity ratio	The ratio of demand flow rate to capacity of a signalized intersection, segment or facility.
Weaving distance	A length of freeway over which traffic streams across paths through lane-changing maneuvers. Same as *weaving segment*.
Weighted effective green ratio	In this Q/LOS Handbook, the average of the critical intersection's through effective green ratio and the average of all the other signalized intersections' through effective green ratios along the arterial facility.

TABLE 1

Generalized **Annual Average Daily** Volumes for Florida's Urbanized Areas

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	16,800	17,700	**
4	Divided	*	37,900	39,800	**
6	Divided	*	58,400	59,900	**
8	Divided	*	78,800	80,100	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	7,300	14,800	15,600
4	Divided	*	14,500	32,400	33,800
6	Divided	*	23,300	50,000	50,900
8	Divided	*	32,000	67,300	68,100

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	2,900	7,600	19,700
50-84%	2,100	6,700	19,700	>19,700
85-100%	9,300	19,700	>19,700	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	2,800	9,500
50-84%	*	1,600	8,700	15,800
85-100%	3,800	10,700	17,400	>19,700

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Core Urbanized

Lanes	B	C	D	E
4	47,600	66,400	83,200	87,300
6	70,100	97,800	123,600	131,200
8	92,200	128,900	164,200	174,700
10	115,300	158,900	203,600	218,600
12	136,500	192,400	246,200	272,900

Urbanized

Lanes	B	C	D	E
4	45,900	62,700	75,600	85,400
6	68,900	93,900	113,600	128,100
8	91,900	125,200	151,300	170,900
10	115,000	156,800	189,300	213,600

Freeway Adjustments

Auxiliary Lanes Present in Both Directions	Ramp Metering
+ 20,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
2	Undivided	11,700	18,000	24,200	32,600
4	Divided	36,300	52,600	66,200	75,300
6	Divided	54,600	78,800	99,400	113,100

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 1
(continued)

Generalized **Annual Average Daily** Volumes for Florida's Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials				Class I	
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 2

Generalized **Annual Average Daily** Volumes for Florida's Transitioning Areas **and** Areas Over 5,000 Not In Urbanized Areas[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	14,400	16,200	**
4	Divided	*	34,000	35,500	**
6	Divided	*	52,100	53,500	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	6,500	13,300	14,200
4	Divided	*	9,900	28,800	31,600
6	Divided	*	16,000	44,900	47,600

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	2,600	6,100	19,500
50-84%	1,900	5,500	18,400	>19,500
85-100%	7,500	19,500	>19,500	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	2,800	9,400
50-84%	*	1,600	8,600	15,600
85-100%	3,800	10,500	17,100	>19,500

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
4	45,100	59,000	70,300	72,600
6	65,300	86,600	104,100	108,900
8	85,900	114,500	138,100	145,300
10	101,600	135,600	161,900	181,800

Freeway Adjustments

Auxiliary Lanes Present in Both Directions	Ramp Metering
+ 20,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
2	Undivided	11,300	17,300	23,400	31,600
4	Divided	34,600	49,900	63,000	71,700
6	Divided	51,700	74,800	94,600	107,400

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1] Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable le for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 2
(continued)

Generalized **Annual Average Daily** Volumes for Florida's Transitioning Areas **and** Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.
		%ffs	Density	ats	ats			
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 3

Generalized **Annual Average Daily** Volumes for Florida's Rural Undeveloped Areas **and** Developed Areas Less Than 5,000 Population[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Lanes	Median	B	C	D	E
2	Undivided	*	12,900	14,200	**
4	Divided	*	29,300	30,400	**
6	Divided	*	45,200	45,800	**

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Rural Undeveloped

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	1,300	2,000	3,200
50-84%	1,000	2,100	3,200	10,600
85-100%	2,600	3,900	18,500	>18,500

Developed Areas

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	2,300	4,900	15,600
50-84%	1,700	4,500	13,300	18,500
85-100%	5,900	18,500	>18,500	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	2,700	9,200
50-84%	*	1,500	8,400	14,900
85-100%	3,600	10,200	16,700	>19,200

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
4	34,800	48,000	56,700	63,200
6	48,900	69,000	82,600	94,800
8	62,900	90,400	108,400	126,400

Freeway Adjustments

Auxiliary Lanes Present in Both Directions + 20,000

UNINTERRUPTED FLOW HIGHWAYS

Rural Undeveloped

Lanes	Median	B	C	D	E
2	Undivided	4,600	8,600	14,000	28,500
4	Divided	31,200	44,900	55,700	62,700
6	Divided	46,800	67,600	83,500	94,200

Developed Areas

Lanes	Median	B	C	D	E
2	Undivided	10,300	15,700	21,300	28,500
4	Divided	29,300	42,300	54,000	61,600
6	Divided	44,000	63,600	81,200	92,400

Passing Lane Adjustments

Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 3
(continued)

Generalized **Annual Average Daily** Volumes for Florida's
Rural Undeveloped Areas **and**
Developed Areas Less Than 5,000 Population

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials		Bicycle		Pedestrian
		Undeveloped		Developed						
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways				
		Two-Lane ru		Two-Lane rd	Multilane ru	Multilane rd
	Density	%tsf	ats	%ffs	Density	Density
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34

Level of Service	Arterials	Bicycle	Pedestrian
	Major City/Co.(ats)	Score	Score
B	> 31 mph	≤ 2.75	≤ 2.75
C	> 23 mph	≤ 3.50	≤ 3.50
D	> 18 mph	≤ 4.25	≤ 4.25
E	> 15 mph	≤ 5.00	≤ 5.00

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

TABLE 4

Generalized **Peak Hour Two-Way** Volumes for Florida's Urbanized Areas[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	1,510	1,600	**
4	Divided	*	3,420	3,580	**
6	Divided	*	5,250	5,390	**
8	Divided	*	7,090	7,210	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	660	1,330	1,410
4	Divided	*	1,310	2,920	3,040
6	Divided	*	2,090	4,500	4,590
8	Divided	*	2,880	6,060	6,130

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	260	680	1,770
50-84%	190	600	1,770	>1,770
85-100%	830	1,700	>1,770	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	250	850
50-84%	*	150	780	1,420
85-100%	340	960	1,560	>1,770

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Core Urbanized

Lanes	B	C	D	E
4	4,050	5,640	6,800	7,420
6	5,960	8,310	10,220	11,150
8	7,840	10,960	13,620	14,850
10	9,800	13,510	17,040	18,580
12	11,600	16,350	20,930	23,200

Urbanized

Lanes	B	C	D	E
4	4,130	5,640	7,070	7,690
6	6,200	8,450	10,510	11,530
8	8,270	11,270	13,960	15,380
10	10,350	14,110	17,310	19,220

Freeway Adjustments

Auxiliary Lanes Present in Both Directions	Ramp Metering
+ 1,800	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
2	Undivided	1,050	1,620	2,180	2,930
4	Divided	3,270	4,730	5,960	6,780
6	Divided	4,910	7,090	8,950	10,180

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1] Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 4
(continued)

Generalized **Peak Hour Two-Way** Volumes for Florida's Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials				Class I	
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 5

Generalized **Peak Hour Two-Way** Volumes for Florida's Transitioning Areas **and** Areas Over 5,000 Not In Urbanized Areas[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	1,300	1,460	**
4	Divided	*	3,060	3,200	**
6	Divided	*	4,690	4,820	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	580	1,200	1,280
4	Divided	*	890	2,590	2,850
6	Divided	*	1,440	4,040	4,280

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	140	550	1,760
50-84%	170	500	1,650	>1,760
85-100%	670	1,760	>1,760	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	250	850
50-84%	*	150	780	1,410
85-100%	340	950	1,540	>1,760

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
4	4,420	5,780	6,890	7,110
6	6,400	8,490	10,200	10,670
8	8,420	11,220	13,530	14,240
10	9,960	13,290	15,870	17,820

Freeway Adjustments

Auxiliary Lanes Present in Both Directions	Ramp Metering
+ 1,800	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
2	Undivided	1,020	1,560	2,110	2,840
4	Divided	3,110	4,490	5,670	6,450
6	Divided	4,650	6,730	8,510	9,670

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1] Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 5
(continued)

Generalized **Peak Hour Two-Way** Volumes for Florida's Transitioning Areas **and** Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.
		%ffs	Density	ats	ats			
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 6

Generalized **Peak Hour Two-Way** Volumes for Florida's Rural Undeveloped Areas **and** Developed Areas Less Than 5,000 Population[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Lanes	Median	B	C	D	E
2	Undivided	*	1,220	1,350	**
4	Divided	*	2,790	2,890	**
6	Divided	*	4,300	4,350	**

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Rural Undeveloped

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	120	190	300
50-84%	100	200	310	1,010
85-100%	250	370	1,760	>1,760

Developed Areas

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	220	460	1,480
50-84%	170	430	1,270	>1,760
85-100%	560	1,760	>1,760	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	220	840
50-84%	*	120	780	1,390
85-100%	320	940	1,560	>1,820

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
4	3,650	5,040	5,950	6,640
6	5,130	7,250	8,670	9,950
8	6,600	9,490	11,380	13,270

Freeway Adjustments

Auxiliary Lanes Present in Both Directions + 1,800

UNINTERRUPTED FLOW HIGHWAYS

Rural Undeveloped

Lanes	Median	B	C	D	E
2	Undivided	440	820	1,330	2,710
4	Divided	2,960	4,270	5,290	5,960
6	Divided	4,450	6,420	7,930	8,950

Developed Areas

Lanes	Median	B	C	D	E
2	Undivided	980	1,490	2,020	2,710
4	Divided	2,780	4,020	5,130	5,850
6	Divided	4,180	6,040	7,710	8,780

Passing Lane Adjustments

Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 6
(continued)

Generalized **Peak Hour Two-Way** Volumes for Florida's Rural Undeveloped Areas **and** Developed Areas Less Than 5,000 Population

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials		Bicycle		Pedestrian
		Undeveloped		Developed						
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways				
		Two-Lane ru		Two-Lane rd	Multilane ru	Multilane rd
	Density	%tsf	ats	%ffs	Density	Density
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34

Level of Service	Arterials	Bicycle	Pedestrian
	Major City/Co.(ats)	Score	Score
B	> 31 mph	≤ 2.75	≤ 2.75
C	> 23 mph	≤ 3.50	≤ 3.50
D	> 18 mph	≤ 4.25	≤ 4.25
E	> 15 mph	≤ 5.00	≤ 5.00

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

TABLE 7 Generalized **Peak Hour Directional** Volumes for Florida's Urbanized Areas

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	830	880	**
2	Divided	*	1,910	2,000	**
3	Divided	*	2,940	3,020	**
4	Divided	*	3,970	4,040	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	370	750	800
2	Divided	*	730	1,630	1,700
3	Divided	*	1,170	2,520	2,560
4	Divided	*	1,610	3,390	3,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	150	390	1,000
50-84%	110	340	1,000	>1,000
85-100%	470	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Core Urbanized

Lanes	B	C	D	E
2	2,230	3,100	3,740	4,080
3	3,280	4,570	5,620	6,130
4	4,310	6,030	7,490	8,170
5	5,390	7,430	9,370	10,220
6	6,380	8,990	11,510	12,760

Urbanized

Lanes	B	C	D	E
2	2,270	3,100	3,890	4,230
3	3,410	4,650	5,780	6,340
4	4,550	6,200	7,680	8,460
5	5,690	7,760	9,520	10,570

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	580	890	1,200	1,610
2	Divided	1,800	2,600	3,280	3,730
3	Divided	2,700	3,900	4,920	5,600

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 7
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials				Class I	
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 8

Generalized **Peak Hour Directional** Volumes for Florida's Transitioning Areas **and** Areas Over 5,000 Not In Urbanized Areas[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	710	800	**
2	Divided	*	1,740	1,820	**
3	Divided	*	2,670	2,740	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	330	680	720
2	Divided	*	500	1,460	1,600
3	Divided	*	810	2,280	2,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	140	320	1,000
50-84%	100	280	940	>1,000
85-100%	380	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,430	3,180	3,790	3,910
3	3,520	4,670	5,610	5,870
4	4,630	6,170	7,440	7,830
5	5,480	7,310	8,730	9,800

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	560	860	1,160	1,560
2	Divided	1,710	2,470	3,120	3,550
3	Divided	2,560	3,700	4,680	5,320

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 8
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's Transitioning Areas **and** Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 9

Generalized **Peak Hour Directional** Volumes for Florida's Rural Undeveloped Areas **and** Developed Areas Less Than 5,000 Population[1]

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Lanes	Median	B	C	D	E
1	Undivided	*	670	740	**
2	Divided	*	1,530	1,580	**
3	Divided	*	2,360	2,400	**

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Rural Undeveloped

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	70	110	170
50-84%	60	120	180	580
85-100%	140	210	1,000	>1,000

Developed Areas

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	120	260	840
50-84%	100	240	720	1,000
85-100%	320	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	120	460
50-84%	*	80	430	770
85-100%	180	520	860	>1,000

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,010	2,770	3,270	3,650
3	2,820	3,990	4,770	5,470
4	3,630	5,220	6,260	7,300

Freeway Adjustments

Auxiliary Lane
+ 1,000

UNINTERRUPTED FLOW HIGHWAYS

Rural Undeveloped

Lanes	Median	B	C	D	E
1	Undivided	240	450	730	1,490
2	Divided	1,630	2,350	2,910	3,280
3	Divided	2,450	3,530	4,360	4,920

Developed Areas

Lanes	Median	B	C	D	E
1	Undivided	540	820	1,110	1,490
2	Divided	1,530	2,210	2,820	3,220
3	Divided	2,300	3,320	4,240	4,830

Passing Lane Adjustments

Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Implementation Office
https://www.fdot.gov/planning/systems/

TABLE 9
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's Rural Undeveloped Areas **and** Developed Areas Less Than 5,000 Population

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials		Bicycle		Pedestrian
		Undeveloped		Developed						
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways				
		Two-Lane ru		Two-Lane rd	Multilane ru	Multilane rd
	Density	%tsf	ats	%ffs	Density	Density
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34

Level of Service	Arterials	Bicycle	Pedestrian
	Major City/Co.(ats)	Score	Score
B	> 31 mph	≤ 2.75	≤ 2.75
C	> 23 mph	≤ 3.50	≤ 3.50
D	> 18 mph	≤ 4.25	≤ 4.25
E	> 15 mph	≤ 5.00	≤ 5.00

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

Appendix F

Water Supply Assessment

SB 610 Water Supply Assessment

FNC Farming Subdivision

May 2024

Prepared For:

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1.0 Introduction and Background

This Water Supply Assessment (WSA) has been prepared pursuant to the requirements of Senate Bill 610 ("SB 610"), requiring public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to the California Environmental Quality Act (CEQA). The City of Tulare is conducting an environmental review under the CEQA requirements for the proposed FNC Farming Project in the city of Tulare, California.

The WSA will evaluate if the total Project water supply determined to be available during normal, single dry, and multiple dry years will meet the Project water demand associated with the Project, in addition to existing and planned future uses in the City of Tulare.

This WSA contains information from the California Water Service 2020 Urban Water Management Plan Update (UWMP) for Tulare's service area and the Integrated Regional Water Management Plan (IRWMP) prepared by the Kaweah River Basin Regional Water Management Group.

SB 221 defines a subdivision as a proposed residential development of more than 500 units, except that for a water agency with fewer than 5,000 service connections, a subdivision includes a residential development project that would account for an increase of 10 percent or more in the number of the agency's existing service connections. Such approvals must be conditioned on the requirement that a sufficient water supply shall be available to serve the Project, where proof of the availability of that supply must be based on a WV prepared by the agency providing water service to the Project. As with SB 610, a "sufficient water supply" under SB 221 means that total water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection will meet the projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including agricultural and industrial uses. Therefore, since the FNC Farming Project proposes the development of 556 units, a WSA is required.

1.1 Water Agencies and Providers

The City of Tulare provides water supplies throughout the city, as well as two unincorporated communities adjacent to the western city limit line, Matheny Tract and Soults Mutual Water Company. The Project involves the annexation of the Site into the City of Tulare. Upon annexation, the Site will be added to the Tulare service area.

Tulare collaborates with the Mid-Kaweah Delta Water Sustainability Agency (MKGSA) and other parties as part of the Mid-Kaweah Groundwater Sustainability Plan (MKGSP). This plan was developed following Assembly Bill 3030. As part of those efforts, the MKGSA member agencies have agreed to manage groundwater extraction in a manner that does not cause undesirable

results in the aquifer. At this time, groundwater pumping allocations have not been established or applied to the groundwater users in the Subbasin. However, the City is committed to working with the MKGSA to achieve groundwater sustainability by 2040.

While the City uses groundwater to supply its customer demands, it does have an agreement with Tulare Irrigation District (TID) to receive surface water supplies, which the City uses for intentional groundwater recharge. The City is working cooperatively with the MKGSA and TID to implement projects and management actions to offset the City's groundwater pumping impacts. Additionally, the city treats and uses its wastewater effluent for either percolation or agriculture. Between the surface water and wastewater effluent, the City is replenishing the aquifer to offset its groundwater extractions.

1.2 Water System and Supply

The City is the only municipal water purveyor within the City limits and provides service to 67,834 City residents and 1,252 customers outside the City limits. The City provides water through five customer classes: single-family, multi-family, commercial, industrial, and landscape. The existing land uses within the city limits include 4,895 acres of residential, 1,501 acres of commercial, 2,308 acres of industrial, 309 acres of Parks and Recreation, and 1,646 acres of public facilities.

Groundwater is the only source of water in Tulare. The Kaweah Groundwater Subbasin is the primary water source for the City of Tulare and surrounding communities. While the Basin is not adjudicated and does not have legal limitations on groundwater pumping, it has been designated a "critically overdrafted basin" by the Department of Water Resources (DWR).

KDWCD regularly provides programs that benefit local agricultural customers by making additional surface water supplies for irrigation available. These programs effectively reduce the withdrawals of groundwater, resulting in in-lieu recharge of the aquifer. Groundwater is typically used by agriculture as an alternate source when surface supplies are not available and is the sole source in areas within KDWCD jurisdiction that do not have access to surface water. KDWCD also operates about 40 dedicated water management basins with an area of approximately 2,100 acres for flood control and groundwater replenishment. The basins can recharge approximately 983 acre-feet per day under optimal conditions.

Tulare District operates the Public Water System (PWS) listed in Table 1-1. Public Water Systems are the systems that provide drinking water for human consumption, and these systems are regulated by the State Water Resources Control Board (Board), Division of Drinking Water.

Table 1-1: Public Water Systems			
Public Water System Number	**Public Water System Name**	**Number of Municipal Connections 2020**	**Volume of Water Supplied, 2020 (AF)**
5410015	City of Tulare	19,583	16,938

2.0 Project Description

2.1 Project Location and Setting

The proposed Project is located on approximately 140.32 acres in the northeast area of the City of Tulare, California, and is generally bound by Prosperity Avenue to the north, Morrison Street to the west, farmland (APNs 172-010-005 and 172-080-002) to the south, and farmland (APN 184-020-011 and 184-020-038) to the east. The Site is comprised of three parcels: APN numbers 184-020-010, 172-010-021, and 172-010-022. APN 184-020-010 consists of approximately 33.85 acres, 172-010-021 is 97.63 acres, and -022 is 10.10 acres. The Site is outside of Tulare's city limits; however, it is located within Tulare's Sphere of Influence. The General Plan designated the Site for Residential Estate and Rural Residential uses.

The proposed Project site is in a developing area of the City of Tulare. New single-family homes are developing to the west of the Project Site, connecting the Site with the existing City. Land uses of adjacent parcels surrounding the Project site are shown in Table 2-1:

Table 2-1: Surrounding Land Uses		
Location	**Existing Land Use**	**Planned Land Use**
North	Rural Residential	Rural Residential
South	Farmland	Rural Residential
West	Farmland	Low and Medium Density Residential
East	Farmland	Farmland

2.2 Description of Proposed Project

The Project Applicant is proposing a Specific Plan to develop approximately 140.32 acres of land into a residential development. The Project will feature single-family residential, rural residential, and park/trail facilities.

Residential

The proposal features several different types of housing which is broken down as follows:

- Low-Density Residential, 5,000 square feet lots: 248 Units

- Low-Density Residential, 6,600 square feet lots: 308 Units
- Rural Residential: 7.8 Acres

It should be noted that the rural residential portion has not been divided into lots at this time. The General Plan states that the density range for rural residential uses is between 0-2 Dwelling Units/Acre (DU/Acre). By using the average of 1 DU/Acre, it will be assumed that there will be 8 units on the 7.8 acres designated for Rural Residential.

Parks, Trails, and Open Space

The Project will provide and dedicate a 5.47-acre park to the City of Tulare. A trail would also be included that runs throughout the Site.

Infrastructure

The Project will require connection to various City-operated utility and infrastructure systems. These include City-provided services such as sewer/wastewater, water, and stormwater facilities. Non-City-provided infrastructure includes natural gas (to be provided by Southern California Gas Company) and electrical services (to be provided by Southern California Edison). The Project will be responsible for the construction of connection points to the City's existing infrastructure.

Phasing / Construction Schedule

The Project is proposed to be built out in five phases. Although the exact timing of construction and buildout will be determined by market conditions, the Project Applicant, and the City, it is anticipated that the Project would be built out over 15 years with approximately 50 residential units per year on average.

Other Public Agencies Approval and Consultation

The Project will require various permits and/or entitlements from regulatory agencies. Consultation may be required, and the City of Tulare will integrate CEQA review with these related environmental review requirements. The following discretionary approvals are required from the City of Tulare for the proposed Project:

- General Plan Land Use Amendment for Lot Sizes and Dwelling Unit Densities
- Zone Amendment Application
- Tulare County Local Agency Formation Commission Annexation
- Tentative Subdivision Map

- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.

The following ministerial approvals are required from the City of Tulare for the proposed Project:

- City of Tulare Building and Encroachment Permits
- Roadway Dedication of Morrison Street, Oakmore Street, Castle Rock Avenue, and Monarch Dunes Avenue

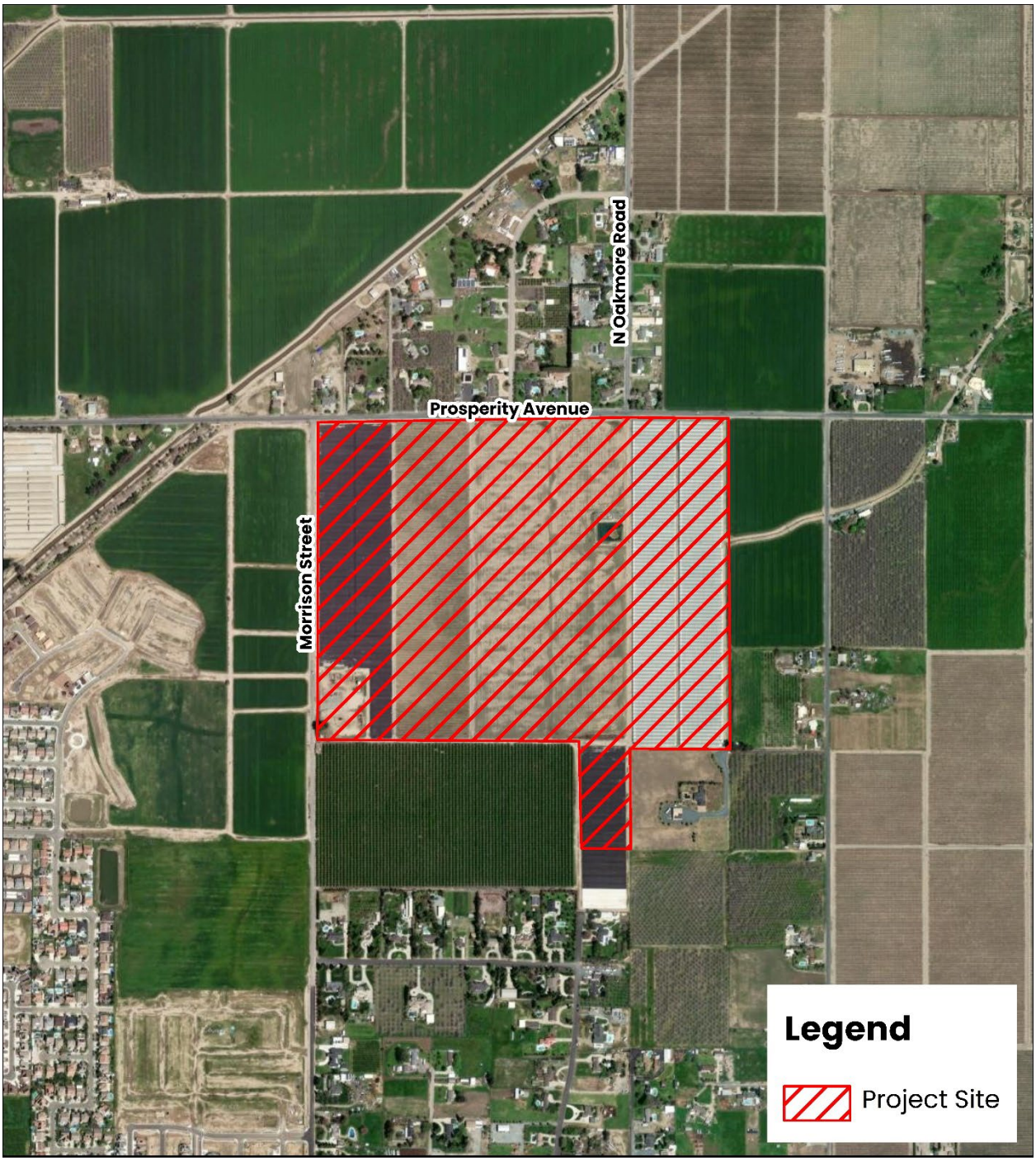

Figure 2-1: Vicinity Map

N

1 in = 1,000 ft

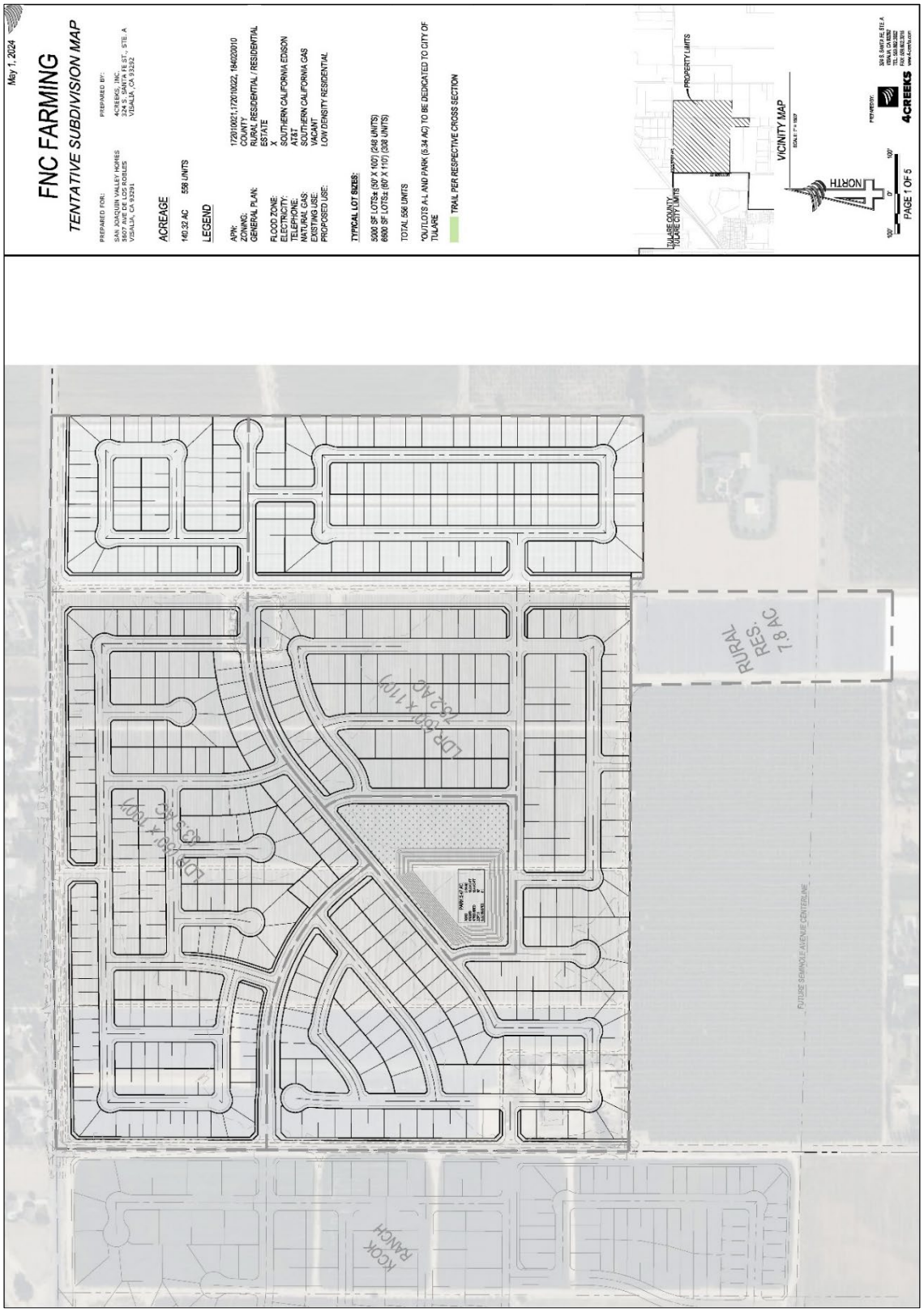

Figure 2-2: Project Site Plan

3.0 Project Water Demand

3.1 Assumptions

Project water demand is estimated using information from the City's adopted 2020 Urban Water Management Plan (UWMP). Project water demand is calculated on the following assumptions:

- Residential: The Project is proposing 564 residential units.
- Per Capita Water Use: The City of Tulare's residential uses (Single and Multi-Family) used a total of 2,919 million gallons of water in 2020, according to the UWMP. The population was stated as 67,834. Therefore, the per capita water use was 43,032 gallons per year, or 118 gallons per capita per day (GPCD) for 2020. This includes residential landscaping. The 2020 UWMP identified the average residential water use as decreasing over time. Projected GPCD per person obtained from the 2020 UWMP will be used to calculate projected water demand from the Project. This includes water used for outdoor landscaping.
- Household Size: According to the American Community Survey, 2015-2019, Table S1101, the average household size is 3.2 persons per household.
- Public Parks: The Project includes approximately 5.47 acres of parks/trails/recreational facilities. To be conservative, it is assumed that the entire park space acreage will be irrigated lawn and will require approximately five acre-feet of water per acre per year. This figure is based on information about water requirements for large, irrigated lawns such as golf courses in the region.

3.2 Project Water Demands

Based on the above assumptions, Project water demand is calculated as follows:

Residential: 564 dwelling units X 3.2 persons per dwelling unit = 1,805 persons X GPCD X 365 days per year = Total number of gallons per year.

It is anticipated that when the Project is complete in 2040, residential water use from the Project will be 77,732,736 gallons per year or approximately 238.5 AF per year. A breakdown of water uses for low-density residential, medium-density residential, and high-density residential is broken down in Table 3-1 below.

Table 3-1. Project Residential Water Demands				
Phase	**Dwelling Units (Total)**	**Population**	**Water Use (Gal/Year)**	**Water Use (AF/Year)**
Phase 1 (2025-2027)	112	358	15,436,288	47.4
Phase 2 (2028-2030)	112	358	30,872,576	94.7
Phase 3 (2031-2033)	112	358	46,308,864	142.1
Phase 4 (2034- 2036)	112	358	61,745,152	189.5
Phase 5 (2037- 2040)	116	371	77,732,736	238.5
Total	**564**	**1,805**	**77,732,736**	**238.5**

Parks: 5.47 acres X 5.0 acre-feet/year = ~27.35 acre-feet/year

It is anticipated that the Project would require approximately 265.89 acre-feet/year of water in the year following project completion.

3.3 Tulare Water Conservation Measures

As identified previously, the Project would use approximately 265.89 acre-feet/year of water once completed. Tulare also has an aggressive conservation program that will continue to reduce per-capita usage and, therefore, demands on critical water sources. Tulare is committed to helping its customers use water efficiently and has developed various water conservation programs to support this goal. To ensure that it is providing the right mix of programs in the most cost-effective manner possible, Tulare routinely conducts comprehensive conservation program analysis and planning. This is done on a five-year cycle in tandem with the UWMP. Tulare's current Water Shortage Contingency Plan provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs).

Demand Management Measures: The first step in a demand reduction program is to prohibit wasteful practices and provide enforcement methods which is part of the City's Mandatory Stage One which is implemented year-round. City Ordinance 2020-07 modifies a portion of Chapter 7.32 in the City's Code to prohibit water waste at all stages and includes other specifics of base conservation including restricted hours of irrigation and ways to encourage minimal methods of watering. The City also maintains a penalty system with penalties that range from a warning to fines to flow restrictors or discontinuance of service.

- Stage 1: (Up to 10% Reduction of Normal Water Supply) Stage 1 is a base stage that is implemented year-round to ensure that the City's water supply is consistently protected and monitored, and that City Ordinance 2020-07 is fully implemented. Wasting water, as determined by the City's Public Utilities Board, includes:
    - The use of water which allows excess water runoff to a gutter, ditch or drain.

- The excessive use, loss or escape of water through breaks, leaks or malfunctions in the water user's plumbing or distribution facilities after such an event should reasonable have been discovered and corrected. It shall be presumed that a period of 48 hours after discovery is a reasonable time within which to correct the defect causing the water waste to occur.
- The washing of vehicles, building exteriors, sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas without the use of a positive shut-off nozzle on the hose, which results in excessive runoff, except where necessary in an emergency or to abate a danger to public health and safety.
- Irrigation of ornamental landscape or other vegetated areas within 48 hours of a rain event if it is a designated watering day.
- Any watering or irrigation of ornamental landscape, turf, or other vegetated area between the hours of 11 a.m. and 6 p.m. on any day, except by the use of a hand-held bucket or similar container or a hand-held hose fitted with a positive shut-off nozzle.
- Installation of non-recirculating water systems in commercial car wash and laundry systems.
- The draining of swimming pools more than once every three years, except for structural repairs, chemical imbalance, or to comply with public health standards determined by the County Health Officer or City code enforcement officer.
- Operating a water feature that does not use recirculated water.
- Food preparation establishments, such as restaurants or cafes, using non-water conserving dish-wash spray valves.

- Stage 2: (Up to 20% Reduction of Normal Water Supply) Stage 2 is a mandatory water shortage reduction stage and correlates to Stage 1 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - All outdoor irrigation shall occur only between the hours of 6 p.m. and 10 a.m. on designated days. Outdoor irrigation is permitted at any time if:
    - A hand-held faucet filled bucket of five gallons or less is used; or
    - A drip irrigation system is used.
  - Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the time restrictions set forth above.
  - Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the time restrictions set forth above.
  - Monday is a non-watering day unless an exemption is on file with the Public Works Department.

- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The operation of any ornamental fountain or other water feature structure making similar use of water is prohibited unless the fountain uses a recycling system, such as an electric pump. Water features are any structure other than a swimming pool or spa (as defined in California Health and Safety Code 115921) that use, receive, or discharge water for other than irrigation or human or animal consumption.
- All restaurants are requested to serve water to customers only when specifically requested by customers, and commercial kitchens are required to use pre-rinse spray valves.
- Lodging establishments must offer customers the option to not receive linen service between the days of their stay.
- The use of water for irrigation of golf greens and tees is permitted only on designated irrigation days between the hours of 8 p.m. and 10 a.m. The following exceptions are granted to the aforementioned restrictions:
  - Landscape irrigation zones that exclusively use drip irrigation systems.
  - Irrigation of ornamental landscapes with the use of an attended hand-held bucket or similar container or an attended hand-held hose equipped with a positive self-closing shut-off nozzle or device.
  - Operation for very short periods of time for the express purpose of adjusting or repairing an irrigation system. A sign must be displayed notifying the public of the repairs while the area remains wet.
  - Sports Fields and public and private golf course greens and tees may deviate from the mandatory irrigation day and time restrictions to maintain play areas and accommodated event schedules by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels.
  - Large Landscape Areas may deviate from the mandatory irrigation day restrictions by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels (additional details per City Ordinance 2020-07).

- Stage 3: (Up to 30% Reduction of Normal Water Supply) Stage 3 is a mandatory shortage reduction stage and correlates to Stage 2 of the City's Ordinance 2020- 07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - No outdoor irrigation allowed during the months of: December, January, and February.

- For the months watering is allowed: All outdoor irrigation shall occur only three days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the permitted time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the permitted time restrictions set forth above.
- Monday will be a non-watering day, unless an approved or conditionally approved exemption is on file with the Public Works Department.
- Overseeding of lawns is prohibited. Exception is provided for maintenance of sports fields and golf course greens and tees.
- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment is permitted only when using a hand-held hose equipped with a positive shut-off nozzle for quick rinses and on one permitted watering days. No fundraising car washes will be permitted.
- In addition, the following prohibitions will apply:
  - Use of water from fire hydrants shall be limited to firefighting and/or testing activities necessary to maintain the health, safety, and welfare of the citizens of Tulare.
  - Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 25% based on their respective 2013 consumption levels.

- Stage 4: (Up to 40% Reduction of Normal Water Supply) Stage 4 is a mandatory shortage reduction stage and correlates to Stage 3 of the City's Ordinance 2020- 07. Stage 4 may be immediately implemented forgoing other previous stages should the Governor of the State of California declare a State or County-wide water emergency. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - No outdoor irrigation allowed during the months of: November, December, January, and February.
  - For the months watering is allowed: All outdoor irrigation shall occur only two days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.

  - Dwellings or establishments with even-numbered street addresses shall water only on Wednesday and Sunday, subject to the permitted time restrictions set forth above.
  - Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday and Saturday, subject to the permitted time restrictions set forth above.
  - Monday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.

- Stage 5: (Up to 50% Reduction of Normal Water Supply) Stage 5 is a mandatory shortage reduction stage and correlates to Stage 4 of the City's Ordinance 2020- 07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - No outdoor irrigation allowed during the months of: November, December, January, February, and March.
  - For the months watering is allowed: All outdoor irrigation shall occur only one day per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
  - Dwellings or establishments with even-numbered street addresses can water landscapes on SUNDAY only.
  - Dwellings or establishments with odd-numbered street addresses can water landscapes on SATURDAY only.
  - Monday, Tuesday, Wednesday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.
  - The washing down of sidewalks, driveways, parking areas, courtyards, patios, or any other paved areas is prohibited.
  - Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 50% based on their respective 2013 consumption levels.

- Stage 6: (Greater than 50% Reduction of Normal Water Supply) Extreme water shortages require drastic reductions in water usage and correlates to Stage 5 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - Dwellings or establishments with even-numbered addresses can hand water trees and large shrubs on SUNDAY ONLY, between the hours of 7 a.m. and midnight.
  - Dwellings or establishments with odd-numbered addresses can hand water trees and large shrubs on SATURDAY ONLY, between the hours of 7 a.m. and midnight.

- MWELO: The California Water Commission approved the State's updated Model Water Efficient Landscape Ordinance (MWELO) on July 15, 2015. The updated MWELO supersedes the State's MWELO developed pursuant to AB 1881. The size of landscapes subject to MWELO has been lowered from 2500 sq. ft. to 500 sq. ft. The size threshold applies to residential, commercial, industrial, and institutional projects that require a permit, plan check or design review. Additionally, the maximum applied water allowance (MAWA) has been lowered from 70% of the reference evapotranspiration (ETo) to 55% for residential landscape projects, and to 45% of ETo for non-residential projects. This water allowance reduces the landscape area that can be planted with high water use plants such as cool season turf. For typical residential projects, the reduction in the MAWA reduces the percentage of landscape area that can be planted to high water use plants from 33% to 25%. In typical non-residential landscapes, the reduction in MAWA limits the planting of high-water use plants to special landscape areas. The revised MWELO allows the irrigation efficiency to be entered for each area of the landscape. The site-wide irrigation efficiency of the previous ordinance (2010) was 0.71; for the purposes of estimating total water use, the revised MWELO defines the irrigation efficiency (IE) of drip irrigation as 0.81 and overhead irrigation and other technologies must meet a minimum IE of 0.75.

3.4 City-Wide Future Estimated Water Use

Table 3-2 Retail: Water Supplies – Projected (AF)

Water Supply	**Projected Water Supply** *Report To the Extent Practicable*			
	2025	**2030**	**2035**	**2040**
	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater: Kaweah Subbasin	6,255	6,421	6,910	7,436
Recycled Water	4,299	4,364	4,429	4,496
Total	**10,554**	**10,785**	**11,339**	**11,932**

Table 3-2 shows the projected supply volumes through 2040. Tulare assumes that current and planned basin recharge activities and land use conversions will result in sufficient groundwater supplies to meet demand through 2040. Therefore, the groundwater supply amounts shown in Table 3-3 equal the projected demand for each year. As the SGMA process unfolds and Tulare better understands the Basin and what is required to sustain it, this assumption will be continually reassessed. Future decisions on basin recharge activities and the potential

development of other supply sources will be based on the accumulated knowledge gained about the groundwater basin.

3.5 Acquisition of Water

Tulare does not currently purchase imported water to serve demand and does not plan on doing so within the next five years.

4.0 Inclusion in Adopted Urban Water Management Plan

UWMP guidelines and the California Water Code require UWMPs to integrate local land use plans in assessing future water conditions and projections for future water use. The Guidelines state: *A UWMP that meets statutory reporting requirements will also reflect short-term and long-term land use planning assumptions and goals, account for specific plan and infill development projects over the course of the UWMP planning period, and it will allow the Supplier to handle the dynamic nature of water supplies and demands through sound water-shortage contingency planning.*

The proposed project site is not shown within the service area boundaries in the current service area map. However, the Tulare UWMP includes growth outside of the current service area in its assessment of future water conditions and projections of future water use.

In the UWMP, projections for future population growth and future residential water use are based on the City's anticipated growth to follow the average rate of the past ten years at 1.5 percent. This includes the projection of expanding outside of City limits within Tulare's Sphere of Influence. As such, the adequacy of the water supply for the Project will be analyzed based on the Tulare's water supply analysis in the Urban Water Management Plan.

5.0 Dry Year Water Supply Adequacy (Water Code Section 10910(C)(4))

The following dry year water supply adequacy is excerpted from the adopted 2020 UWMP for the City of Tulare.

The City's water supplies are drawn 100% from groundwater supplies. There are currently no concerns regarding a diminishment of the groundwater supplies, such as the City's inability to provide water to its service area. In all estimates and projections, supply is equal to demand, given that the City does not have an accurate account of the quantity of groundwater available in the aquifers below ground, and the City shares these aquifers with other municipal service areas. Current and ongoing management of these supplies is achieved through voluntary and state-mandated consumption conservation efforts and SGMA.

The reliability of the City's groundwater supplies for the various water year types is summarized in Table 5-1. The available supplies in Table 5-1 are assumed to equal the maximum demands across all forecast years in Tables 5-2, 5-3, and 5-4. Tulare expects that the assumption of the sufficiency of groundwater supplies, as augmented by expected enhanced recharge activities, to meet future demands through 2040 will be carefully evaluated and may be revised as part of the Groundwater Sustainability Plan required by SGMA.

Water supply and demand patterns change during normal, single-dry, and multi-dry years. Tulare has relied on demand modeling to forecast demands for normal, single dry, and multiple dry years. It is assumed that Tulare's groundwater supply for the District will be able to serve those demands.

Table 5-1 Retail: Basis of Water Year Data

Year Type	Base Year	**Available supplies if year type repeats**	
		Agency may complete these columns for volume only, percent only, or both	
		Volume Available (AF)	% of avg supply
Average Year	2004	5,806	100%
Single-Dry Year	2011	5,694	90%
Multiple-Dry 1st Year	2013	6,362	98%
Multiple-Dry Years 2nd Year	2014	5,876	89%
Multiple Dry Years 3rd Year	2015	5,002	75%
Multiple Dry Years 4th Year	2016	5,099	76%
Multiple Dry Years 5th Year	2017	5,319	77%

Table 5-2 shows a normal year's projected supply and demand totals. The supply totals match those in Table 3-2.

Table 5-2 Retail: Normal Year Supply and Demand Comparison (AF)

	2025	**2030**	**2035**	**2040**
Supply Totals	6,255	6,421	6,910	7,436
Demand Totals	6,255	6,421	6,910	7,436
Difference	0	0	0	0

Table 5-3 shows the projected supply and demand totals for a single dry year.

Table 5-3 Retail: Single Dry Year Supply and Demand Comparison (AF)				
	2025	**2030**	**2035**	**2040**
Supply Totals	6,255	6,421	6,910	7,436
Demand Totals	6,255	6,421	6,910	7,436
Difference	0	0	0	0

Table 5-4 shows the projected supply and demand totals for the multiple dry years.

Table 5-4 Retail: Multiple Dry Years Supply and Demand Comparison (AF)					
Conditions		**2025**	**2030**	**2035**	**2040**
First Year	Supply Totals	6,255	6,421	6,910	7,436
	Demand Totals	6,255	6,421	6,910	7,436
	Difference	**0**	**0**	**0**	**0**
Second Year	Supply Totals	6,255	6,421	6,910	7,436
	Demand Totals	6,255	6,421	6,910	7,436
	Difference	**0**	**0**	**0**	**0**
Third Year	Supply Totals	6,255	6,421	6,910	7,436
	Demand Totals	6,255	6,421	6,910	7,436
	Difference	**0**	**0**	**0**	**0**

6.0 Comparison of Project Demand to Water Supply Sources

Table 6-2 analyzes projected water demands needed to serve the City of Tulare for the next 15 years, comparing projected baseline community growth against the reasonably expected population growth resulting from the FNC Farming Project. The table is labeled with lettering corresponding to each column of information.

Columns A through E represent the reasonably expected baseline condition for Tulare. Columns F through G represent the reasonably expected baseline condition for Tulare if the Project site was not developed at all. Columns H through J represents the population added by the FNC Farming Project alone. Columns K through N represents the Tulare water demand with the FNC Farming Project.

Column A represents the calendar year projection used in the analysis. Column B displays expected daily water use per person, which decreases over time due to measures taken by Tulare to increase water efficiency. Column C displays the forecast for the Tulare District population, which was excerpted from Tulare's UWMP. The annual growth rate calculated from this forecast is shown in Column D. Column E represents the expected residential water demand forecasted by the Tulare UWMP. The values in Column E are derived from the forecasted average per capita daily water consumption (Column B). Column E depicts the baseline future service area population with no project site development. Because the Site was planned for residential development, it was important to calculate the service area population with no site development to identify an appropriate baseline to which project-related water use should be added.

Existing residential General Plan Land Use designations on the Site were Residential Estate (2.1-3 DU/acre) and Rural Residential (0-2 DU/acre). Using these values and the acreage of each planned land use on the Site, it was determined that the Site was planned for 339 dwelling units or 1,084 residents (See Table 6-1 below). The values in Column F were calculated by subtracting 1,084 residents from the population expected to be added between 2025 and 2040 (Column C). These dates were selected because they coincide with the proposed buildout of the FNC Farming. The annual growth rate with no site development is shown in Column G.

Table 6-1: Comparison of Planned Land Uses to Proposed Project

	Existing (City of Tulare General Plan)				Proposed (FNC Farming)			
	Acres	**Land Use Density (DU/Acre)**	**DU**	**Project Area Population[1]**	**Acres**	**Land Use Density (DU/Acre)**	**DU**	**Project Area Population[1]**
Estate Residential	131.48	2.5	329	1,052	0	N/A	N/A	N/A
Rural Residential	10.1	1	10	32	7.8	1	8	25
Low Density Residential	0	N/A	N/A	N/A	132.5	4.20	556	1,779
Totals	**141.6**	**-**	**339**	**1,084**	**140.32**	**-**	**564**	**1,804**
Change in Population from Project								**+720**

1. Assumes 3.2 persons per dwelling unit (American Community Survey, 2015-2019, Table S1101)

The purpose of the remainder of the table (Columns H thru N) is to demonstrate the expected reasonable impact on water demand from the FNC Farming Project and to quantify any necessary new water supply needed from the Project to mitigate the reasonably foreseeable impacts. Columns H and I show the expected additional population resulting from the Project by year, in dwelling units and population. Column J identifies the Project's total accrued population for each construction year. Column M represents the expected population growth for the Tulare District, which includes the FNC Farming Project. The Values in Column K were calculated by adding the accrued population of the FNC Farming Project to the projected Service Aera Population with no development of the project site. The resulting adjusted growth rate is depicted in Column L. Column M provides the resulting residential water demand for the

service area with the FNC Farming Project included. Column N provides the change in residential water demand attributable to the Project development.

The Tulare UWMP estimated the residential water demand within the service area to be 11,870 AF by 2040. The residential water demand in the service area with the Project was calculated to be 11,963 AF by 2040. The Project is expected to demand approximately 93 AF more water than the demand estimated by the Tulare UWMP. The Project will increase Tulare's water demand; however, because the City has no restrictions on groundwater pumping, it can be assumed that the water system can include the FNC Farming Project. However, the Project's pond will have an estimated yearly recharge of approximately 140 AF of groundwater. (See Section 7.3) This results in the Project using 125.89 AFY Net Consumed Groundwater and would result in the Project demanding approximately 47 AF less than the estimated demand from the Tulare UWMP.

Table 6-2: Anticipated City Water Demands and Available Supply: Years 2025 – 2045

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Year	Per Capita Water Use[1]	Service Area Population Anticipated by Tulare UWMP[1]	Service Area Growth Rate Assumed by Tulare UWMP	Service Area Residential Water Demand Assumed by Tulare UWMP	Service Area Population with no development of Project site[2,3]	Service Area Growth Rate with No Development of the Project Site[3]	Added Population from FNC Farming Project		Total FNC Farming Population (accrued)	Service Area Population with Project [3,4]	Service Area Growth Rate with Project[3]	Service Area Residential Water Demand with Project	Change in Service Area Residential Water Demand attributable to Project
	Gal/Person/ Day			AFY			DU Added	Population Added				AFY	
2020	118	69,086	0.0%	9,130	69,086	-	0	0		69,086		9,130	0.00
2025	118	73,076	5.78%	9,658	71,991	4.20%	12	38	38	72,029	4.26%	9,519	-138.32
2026	118	74,206	1.55%	9,807	73,121	1.57%	50	160	198	73,319	1.79%	9,690	-117.17
2027	118	75,335	1.52%	9,956	74,250	1.54%	50	160	358	74,609	1.76%	9,860	-96.03
2028	118	76,465	1.50%	10,105	75,380	1.52%	12	38	397	75,777	1.57%	10,014	-90.95
2029	118	77,594	1.48%	10,255	76,509	1.50%	50	160	557	77,066	1.70%	10,185	-69.81
2030	118	78,724	1.46%	10,404	77,639	1.48%	50	160	717	78,356	1.67%	10,355	-48.66
2031	117	79,941	1.55%	10,475	78,856	1.57%	12	38	755	79,611	1.60%	10,432	-43.22
2032	117	81,158	1.52%	10,635	80,073	1.54%	50	160	915	80,988	1.73%	10,612	-22.25
2033	117	82,374	1.50%	10,794	81,289	1.52%	50	160	1,075	82,365	1.70%	10,793	-1.28
2034	117	83,591	1.48%	10,954	82,506	1.50%	12	38	1,114	83,620	1.52%	10,957	+3.75
2035	117	84,808	1.46%	11,113	83,723	1.47%	50	160	1,274	84,997	1.65%	11,138	+24.71
2036	116	86,119	1.55%	11,188	85,034	1.57%	50	160	1,434	86,468	1.73%	11,234	+45.29
2037	116	87,430	1.52%	11,359	86,345	1.54%	12	38	1,472	87,817	1.56%	11,409	+50.28
2038	116	88,741	1.50%	11,529	87,656	1.52%	50	160	1,632	89,288	1.68%	11,600	+71.06
2039	116	90,052	1.48%	11,699	88,967	1.50%	50	160	1,792	90,759	1.65%	11,791	+91.85
2040	116	91,363	1.46%	11,870	90,278	1.47%	4	13	1,805	92,083	1.46%	11,963	+93.51
2041	115	92,733	1.50%	11,944	91,648	1.52%	0	0	1,805	93,453	1.49%	12,037	+92.71
2042	115	94,124	1.50%	12,123	93,039	1.52%	0	0	1,805	94,844	1.49%	12,216	+92.71
2043	115	95,536	1.50%	12,305	94,451	1.52%	0	0	1,805	96,256	1.49%	12,398	+92.71
2044	115	96,969	1.50%	12,489	95,884	1.52%	0	0	1,805	97,689	1.49%	12,582	+92.71
2045	115	98,424	1.50%	12,677	97,339	1.52%	0	0	1,805	99,144	1.49%	12,769	+92.71

1. Provided by Tulare Urban Water Management Plan
2. Calculated based on 1085 fewer residents added to population than was assumed by the Tulare UWMP. Reduction in population based on Site's GPLU designation.
3. Assumes normal growth rate would resume in 2040, when construction of the FNC Farming Project would be complete.
4. Calculated as: Previous Year Population + Anticipated Change in Population with No Development + Population Added from Proposed Development

7.0 Water Supply Rights and Entitlements; Historic Water Usage (Water Code Section 10910(A)(1) and 10910(D)(2))

The City's groundwater supplies stem from the unadjudicated Basin underlying the area, the Kaweah Groundwater Subbasin (Subbasin), as described in DWR's Bulletin 118 (DWR, 2006). While the Basin is not adjudicated and does not have legal limitations on groundwater pumping, it has been designated a "critically overdrafted basin" by DWR. The City participates in the Mid-Kaweah Groundwater Sustainability Agency (MKGSA), which prepared and submitted the Mid-Kaweah Groundwater Sustainability Plan (MKGSP) in January 2020. As part of those efforts, the MKGSA member agencies have agreed to manage groundwater extraction in a manner that does not cause undesirable results in the aquifer. Currently, groundwater pumping allocations have not been established or applied to the groundwater users in the Subbasin. However, the City is committed to working with the MKGSA to achieve groundwater sustainability by 2040.

7.1 Kaweah Subbasin

The Kaweah Subbasin covers an area of approximately 446,000 acres (696 square miles) in the San Joaquin Valley and lies between the Kings Subbasin on the north, the Tule Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Tulare Lake subbasin on the west.

The Kaweah Subbasin is designated a high-priority basin under DWR's 2019 Phase 2 Basin Prioritization. Under this prioritization process, basins are ranked on eight components, and if a basin is assigned more than 21 total points, it is defined as "high priority." The main factors driving the designation in the Kaweah Subbasin include irrigated acreage per square mile (5 out of 5 possible points), population growth (5 out of 5 possible points), and groundwater reliance (5 out of 5 possible points). Additional factors include documented impacts, including declining groundwater levels and subsidence (4 out of 5 possible points) and total well density (4 out of 5 possible points). However, because the Subbasin is critically over-drafted, it is assigned 40 priority points, which is the maximum total points under DWR's ranking system.

Three GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Kaweah Subbasin. The three GSAs within the Basin include the Mid-Kaweah GSA, East Kaweah GSA, and Greater Kaweah GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., developing a coordinated water budget) were cooperatively developed through a Coordination Agreement.

Tulare falls within the jurisdiction of the Mid-Kaweah GSA, which covers an area of approximately 104,320 acres in the central to the southwestern side of the Kaweah Subbasin. The Mid-Kaweah GSA was formed on September 14, 2015, through the execution of a Joint Powers Agreement (JPA) between the City of Tulare, the City of Visalia, and TID to establish the

Mid-Kaweah Groundwater Subbasin JPA. The Mid-Kaweah GSA GSP was submitted to DWR on January 31, 2020.

As defined under SGMA, sustainable yield means "the maximum quantity of water, calculated over a base period representative of long-term conditions in a basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results." The three GSAs within the Kaweah Subbasin determined a subbasin-wide sustainable yield of 660,000 acre-feet per year (AFY), which was further apportioned among the GSAs in the Kaweah Subbasin Coordination Agreement.

Projects and management actions described in the Mid-Kaweah GSA GSP include groundwater recharge projects and programs, surface reservoir projects, leveraged surface water exchange programs, a groundwater extraction measurement implementation program, a conceptual groundwater marketing program, and future urban and agricultural conservation. The Mid-Kaweah GSA GSP states that the GSA will work from 2020 to 2025 to develop a pumping allocation program to achieve, along with neighboring GSAs, the Kaweah Subbasin's sustainable yield by 2040. The Mid-Kaweah GSA plans to prioritize the projects/programs above to serve as the first means to achieve sustainability, but by 2026, it is anticipated that an allocation plan will be ready for implementation if necessary to achieve sustainability.

7.2 Tule Subbasin

Tulare notified Tulare County, TID, KDWCD, MKGSA, and City of Visalia that the City's UWMP was being updated for 2020. In accordance with the UWMPA, this notification was provided to Tulare County at least 60 days prior to the public hearing of the plan. Copies of the final UWMP will be provided to Tulare County no later than 30 days after its submission to DWR.

The City has no wholesale arrangements (either as a customer or provider) as of the date this UWMP was adopted, so there were no required coordination efforts in this regard.

7.3 Kaweah Subbasin Sustainable Yield

According to the Mid-Kaweah GSA GSP, the Kaweah Subbasin had an average annual overdraft of 77,600 AFY from 1997 to 2017. To counter this, the three GSAs in the Kaweah Subbasin set a sustainable yield allocation to respond to the current and anticipated long-term groundwater conditions of the Kaweah Subbasin, considering the requirement by the Sustainable Groundwater Management Act (SGMA) to have a sustainable groundwater supply by 2040. The sustainable yield allocations are set for groundwater pumping by agricultural lands. However, by comparing it to the Project's demands, the impact on the Subbasin can be tested. The sustainable yields and penalties are listed as follows:

- Sustainable Yield Allocation is 0.83 acre-feet/acre per year.
- Tier 1 Penalty Allocation is an additional 0.83 acre-feet/acre per year.
- Tier 2 Penalty Allocation is an additional 1.04 acre-feet/acre per year.

The combined total for Sustainable Yield, Tier 1, and Tier 2 is 2.70 acre-feet/acre. There will be penalty costs if a landowner uses more than the Sustainable Yield Allocation of 0.83 acre-feet/acre of groundwater. For water year (WY) 2023, Tier 1, the Penalty Rate is $60.00 per acre-foot; for Tier 2, the Penalty Rate is $120.00 per acre-foot. If a landowner exceeds the Tier 2 allocation, a $500 penalty per acre-foot will be imposed.

The amount of water based on the sustainable yield allocation is the net groundwater consumptive use rather than the gross amount of groundwater pumped. The formula for net groundwater consumptive use is shown below.

Net Consumed Groundwater Used = (Gross Groundwater Pumped) – (Estimated Return Flow)

The Project will demand and pump 265.89 AFY of groundwater at complete operation. The stormwater retention pond is estimated to recharge approximately 140 AF of groundwater annually. This results in the Project using 125.89 AFY Net Consumed Groundwater. Over the Project's 140.32 acres, the Project has a Net Consumed Groundwater of .90 acre-feet/ acre per year. This is lower than the limit of 2.70 acre-feet/acre per year. This shows that the Project will not increase the danger of undesirable effects of overdraft in the Subbasin.

7.4 Project's Water Demands Compared to Agricultural Demands

Urban development typically uses less water than agricultural uses. The Mid-Kaweah GSA states that 94% of the total water use is for agricultural services. Due to this, the current agrarian water demands should be compared to the project water demands. According to the California Natural Resources Agency, the Project Site is currently used for Truck Crops-Bushberries. The agrarian water demands are shown below in Table 7-1.

Table 7-1: Project Site Agricultural Demands

Crop Type	*Acres of Crop*	*Crop Water Demands (AFY/Acre)*[1]	*Total Water Demand (AFY)*
Truck Crops-Bushberries	127	3.5	444

1. Crop Demands are from Tulare County averages in 2015, provided by the California Department of Water Resources.

As shown, the project site would be expected to demand approximately 444 AFY if it remained agricultural. This is higher than the Project's demand of 265.89 AFY. This shows that the Project will not increase the danger of undesirable effects of overdraft in the Subbasin.

8.0 Contingency Analysis Applicability (Government Code Section 66473.7 (2)(b))

Tulare's 2021 Water Shortage Contingency Plan (WSCP) identifies six shortage levels that increase with the severity of the water supply shortage. A level 1 water shortage necessitates a demand reduction of up to 10%, while a level 6 shortage necessitates a demand reduction of 50% or greater. Tulare's WSCP provides a full spectrum of Water Shortage Contingency Plan measures to reduce the City's water consumption. Depending on the water shortage level, the urban water supplier may use any combination of consumption reduction measures to achieve the necessary water demand reductions. The City's contingency planning is designed to ensure that the necessary water supply will be available in each water shortage scenario. These water supply contingency measures, applicable to the entire Tulare water service area, are fully applicable to the Project and protective of the adequacy of the Project's water supply. Pages 5-1 to 5-7 of the WSCP are provided in Appendix A to satisfy Government Code Section 66473.7 (2)(b).

9.0 Assessment Findings

It is concluded that Tulare's water system has sufficient capacity to supply the FNC Farming Project and other projected demands within the City's service area through the year 2040. The City of Tulare will provide the main source of water for this Project. Additionally, the Project will not increase the danger of undesirable effects of overdraft in the Kaweah subbasin.

Therefore, the City of Tulare is recommended to approve this assessment for inclusion in the CEQA documentation for the proposed FNC Farming Project.

References

- California Department of Water Resources, 2015. Agricultural Land and Water Use Estimates. Available Online at Source.
- California Natural Resources Agency, 2021. Statewide Crop Mapping 2021. Available Online at Source.
- City of Tulare, Urban Water Management Plan, 2021. 2020 Urban Water Management Plan. Available Online at Source.
- City of Tulare, 2014. Tulare General Plan. Available online at source.
- Mid-Kaweah Groundwater Sustainability Agency, 2019. Groundwater Sustainability Plan. Available Online at Source.
- Pacific Institute, 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California, Appendix E. Available Online at Source.

Appendix A

Pages Excerpted from City of Tulare 2020 UWMP

Provided in satisfaction of Water Code Section 10910(A)(1), Water Code Section 10910(D)(2) and Government Code Section 66473.7 (2)(b)

5 Shortage Response Actions

5.1 Demand Reduction

The first step in a demand reduction program is to prohibit wasteful practices and provide enforcement methods which is part of the City's Mandatory Stage One which is implemented year-round. City Ordinance 2020-07 (see **Appendix A**) modifies a portion of Chapter 7.32 in the City's Code to prohibit water waste at all stages and includes other specifics of base conservation including restricted hours of irrigation and ways to encourage minimal methods of watering. The City also maintains a penalty system with penalties that range from a warning to fines to flow restrictors or discontinuance of service.

The following section provides additional details regarding restrictions imposed by the six water shortage stages implemented during periods of dry hydrology or catastrophic water supply interruption.

Any person found violating any portion of mandatory compliance will be subject to penalties. All persons, customers, and property within the limits of the City shall not commit water waste as identified in the City's Code §7.32.50.

Legal Requirements:

§10632(a)(4) *Shortage response actions that align with the defined shortage levels.*

5.1.1 Stage 1: (Up to 10% Reduction of Normal Water Supply)

The City continues to strive to implement water conservation measures year-round. As good stewards of the available groundwater supplies and to ensure that groundwater supplies continue to be a reliable source, the City implements Stage 1 of its demand reduction program.

Stage 1 is a base stage that is implemented year-round to ensure that the City's water supply is consistently protected and monitored, and that City Ordinance 2020-07 is fully implemented.

- Wasting water, as determined by the City's Public Utilities Board, includes:
    - The use of water which allows excess water runoff to a gutter, ditch or drain.
    - The excessive use, loss or escape of water through breaks, leaks or malfunctions in the water user's plumbing or distribution facilities after such an event should reasonably have been discovered and corrected. It shall be presumed that a period of 48 hours after discovery is a reasonable time within which to correct the defect causing the water waste to occur.
    - The washing of vehicles, building exteriors, sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas without the use of a positive shut-off nozzle on the hose, which results in excessive runoff, except where necessary in an emergency or to abate a danger to public health and safety.
    - Irrigation of ornamental landscape or other vegetated areas within 48 hours of a rain event if it is a designated watering day.

- Any watering or irrigation of ornamental landscape, turf, or other vegetated area between the hours of 11 a.m. and 6 p.m. on any day, except by the use of a hand-held bucket or similar container or a hand-held hose fitted with a positive shut-off nozzle.
- Installation of non-recirculating water systems in commercial car wash and laundry systems.
- The draining of swimming pools more than once every three years, except for structural repairs, chemical imbalance, or to comply with public health standards determined by the County Health Officer or City code enforcement officer.
- Operating a water feature that does not use recirculated water.
- Food preparation establishments, such as restaurants or cafes, using non-water conserving dish-wash spray valves.

5.1.2 Stage 2: (Up to 20% Reduction of Normal Water Supply)

Stage 2 is a mandatory water shortage reduction stage and correlates to Stage 1 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- All outdoor irrigation shall occur only between the hours of 6 p.m. and 10 a.m. on designated days. Outdoor irrigation is permitted at any time if:
  - A hand-held faucet filled bucket of five gallons or less is used; or
  - A drip irrigation system is used.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the time restrictions set forth above.
- Monday is a non-watering day unless an exemption is on file with the Public Works Department.
- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The operation of any ornamental fountain or other water feature structure making similar use of water is prohibited unless the fountain uses a recycling system, such as an electric pump. Water features are any structure other than a swimming pool or spa (as defined in California Health and Safety Code 115921) that use, receive, or discharge water for other than irrigation or human or animal consumption.
- All restaurants are requested to serve water to customers only when specifically requested by customers, and commercial kitchens are required to use pre-rinse spray valves.
- Lodging establishments must offer customers the option to not receive linen service between the days of their stay.

- The use of water for irrigation of golf greens and tees is permitted only on designated irrigation days between the hours of 8 p.m. and 10 a.m.

The following exceptions are granted to the aforementioned restrictions:

  - Landscape irrigation zones that exclusively use drip irrigation systems.
  - Irrigation of ornamental landscapes with the use of an attended hand-held bucket or similar container or an attended hand-held hose equipped with a positive self-closing shut-off nozzle or device.
  - Operation for very short periods of time for the express purpose of adjusting or repairing an irrigation system. A sign must be displayed notifying the public of the repairs while the area remains wet.
  - Sports Fields and public and private golf course greens and tees may deviate from the mandatory irrigation day and time restrictions to maintain play areas and accommodated event schedules by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels.
  - Large Landscape Areas may deviate from the mandatory irrigation day restrictions by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels (additional details per City Ordinance 2020-07).

5.1.3 Stage 3: (Up to 30% Reduction of Normal Water Supply)

Stage 3 is a mandatory shortage reduction stage and correlates to Stage 2 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- No outdoor irrigation allowed during the months of: December, January, and February.
- For the months watering is allowed: All outdoor irrigation shall occur only three days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the permitted time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the permitted time restrictions set forth above.
- Monday will be a non-watering day, unless an approved or conditionally approved exemption is on file with the Public Works Department.
- Overseeding of lawns is prohibited. Exception is provided for maintenance of sports fields and golf course greens and tees.

- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment is permitted only when using a hand-held hose equipped with a positive shut-off nozzle for quick rinses and on one permitted watering days. No fundraising car washes will be permitted.
- In addition, the following prohibitions will apply:
    - Use of water from fire hydrants shall be limited to firefighting and/or testing activities necessary to maintain the health, safety, and welfare of the citizens of Tulare.
    - Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 25% based on their respective 2013 consumption levels.

5.1.4 Stage 4: (Up to 40% Reduction of Normal Water Supply)

Stage 4 is a mandatory shortage reduction stage and correlates to Stage 3 of the City's Ordinance 2020-07. Stage 4 may be immediately implemented forgoing other previous stages should the Governor of the State of California declare a State or County-wide water emergency. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- No outdoor irrigation allowed during the months of: November, December, January, and February.
- For the months watering is allowed: All outdoor irrigation shall occur only two days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday and Sunday, subject to the permitted time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday and Saturday, subject to the permitted time restrictions set forth above.
- Monday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.

5.1.5 Stage 5: (Up to 50% Reduction of Normal Water Supply)

Stage 5 is a mandatory shortage reduction stage and correlates to Stage 4 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- No outdoor irrigation allowed during the months of: November, December, January, February, and March.

- For the months watering is allowed: All outdoor irrigation shall occur only one day per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses can water landscapes on SUNDAY only.
- Dwellings or establishments with odd-numbered street addresses can water landscapes on SATURDAY only.
- Monday, Tuesday, Wednesday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The washing down of sidewalks, driveways, parking areas, courtyards, patios, or any other paved areas is prohibited.
- Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 50% based on their respective 2013 consumption levels.

5.1.6 Stage 6: (Greater than 50% Reduction of Normal Water Supply)

Extreme water shortages require drastic reductions in water usage and correlates to Stage 5 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- Dwellings or establishments with even-numbered addresses can hand water trees and large shrubs on SUNDAY ONLY, between the hours of 7 a.m. and midnight.
- Dwellings or establishments with odd-numbered addresses can hand water trees and large shrubs on SATURDAY ONLY, between the hours of 7 a.m. and midnight.

Table 5-1 shows the demand reduction actions and their associated percentage by which it is anticipated each action will reduce overall system demands. Although the City has not experienced water supply shortages historically, even during drought conditions, the City continues to implement demand reduction efforts year-round (Stage 1) and additional mandatory demand reductions in response to periods of dry hydrology or other water shortage conditions that may arise not related to drought conditions. This table is reformatted from the standard DWR Submittal Table 8-2 but presents the same information.

Table 5-1: Demand Reduction Actions (DWR WSCP Submittal Table 8-2)

Shortage Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
All	Expand Public Information Campaign	4%		Yes
All	Landscape - Restrict or prohibit runoff from landscape irrigation	1%		Yes
All	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%		Yes
All	Other - Require automatic shut-off hoses	1%		Yes
All	Landscape - Other landscape restriction or prohibition	1%	Irrigating ornamental landscape or vegetated areas within 48 hours of a rain event	Yes
All	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	2%		Yes
All	Other water feature or swimming pool restriction	1%	Draining of pools more than once every three years with exceptions (see Ordinance for complete language)	Yes
All	Water Features - Restrict water use for decorative water features, such as fountains	1%		Yes
All	CII - Commercial kitchens required to use pre-rinse spray valves	1%		Yes
2 thru 6	Increase Water Waste Patrols	3%		Yes
2 thru 6	CII - Restaurants may only serve water upon request	1%		Yes
2 thru 6	Landscape - Limit landscape irrigation to specific times	2%		Yes
2 thru 6	CII - Lodging establishment must offer opt out of linen service	1%		Yes
2 thru 6	Other - Prohibit use of potable water for washing hard surfaces	3%		Yes
2	Landscape - Limit landscape irrigation to specific days	5%	3 days per week	Yes

Shortage Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
3	Landscape - Limit landscape irrigation to specific days	10%	3 days per week, 9 months of the year	Yes
4	Landscape - Limit landscape irrigation to specific days	15%	2 days per week, 8 months of the year	Yes
5	Landscape - Limit landscape irrigation to specific days	20%	1 day per week, 7 months of the year	Yes
6	Landscape - Limit landscape irrigation to specific days	23%	1 day per week, hand watering trees and shrubs only	Yes
3 thru 6	Landscape - Other landscape restriction or prohibition	1%	Overseeding of lawns is prohibited.	Yes
3 thru 6	Other	1%	Use of water from fire hydrants shall be limited to firefighting and/or strictly necessary testing activities.	Yes
3 thru 4	Other	5%	Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 25%.	Yes
5 thru 6	Other	10%	Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 50%.	Yes