

City of Manteca
The WoodSpring Suites 120 Retail Project
Site Plan/Design Review (SPC-23-075)
Tentative Parcel Map (TPM 23-076)
Minor Use Permit (UPN-23-077)
Draft Initial Study and Mitigated Negative Declaration

Prepared for
City of Manteca
City of Manteca Development Services Department
1215 W. Center St. Suite 201
Manteca, CA 95337



February 2024

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1.0 INTRODUCTION & PURPOSE

1.1 Purpose and Scope of the Initial Study

This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] Section 21000 et seq.) and its Guidelines (California Code of Regulations [CCR], Title 14, Section 15000 et seq.), to evaluate the potential environmental effects associated with the construction and operation of the WoodSpring Suites 120 Retail Project. Pursuant to Section 15367 of the State CEQA Guidelines, the City of Manteca (City) is the lead agency for the project. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project.

As set forth in the State CEQA Guidelines Section 15070, an IS/MND can be prepared when the Initial Study has identified potentially significant environmental impacts, but revisions have been made to a project, prior to public review of the Initial Study, that would avoid or mitigate the impacts to a level considered less than significant; and there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.

1.2 Summary of Findings

Section 3.0 of this document contains the Environmental Checklist that was prepared for the proposed project pursuant to CEQA requirements. The Environmental Checklist indicates whether the proposed project would result in significant impacts with the implementation of mitigation measures, as identified throughout this document.

MITIGATION MEASURES

State CEQA Guidelines Section 15041, *Authority to Mitigate*, gives the lead agency for a project the authority to require feasible changes in any or all activities involved in the project in order to substantially lessen or avoid significant effects on the environment, consistent with applicable constitutional requirements such as the “nexus” and “rough proportionality” standards. CEQA Guidelines Section 15364 defines “feasible” as capable of being accomplished in a successful manner within a reasonable period of time, considering economic, environmental, legal, social, and technological factors. Mitigation measures will be adopted to reduce the environmental impacts to less than significant levels and must be consistent with all applicable constitutional requirements, including the following:

- There must be an essential nexus (i.e., connections) between the mitigation measure and legitimate governmental interest.
- The mitigation measure be “roughly proportional” to the impacts of the project.

Several forms of mitigation under CEQA Section 15370 are summarized as follow:

- Avoiding the **impact** by not taking a certain action(s);
- **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation;
- **Rectifying** the impact by repairing, rehabilitating, or restoring the impact environment;

- **Reducing** or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- **Compensating** for the impact by replacing or providing substitute resources or environment.

Avoiding impacts is the preferred form of mitigation, followed by minimizing or rectifying the impact to less than significant levels. Compensating for impacts would be pursued if no other form of mitigation is feasible.

ENVIRONMENTAL RESOURCE TOPICS

This IS/MND evaluates the proposed Project's impacts on the following resource topic:

- | | |
|---------------------------------------|---------------------------------|
| ▪ Aesthetics | ▪ Land Use and Planning |
| ▪ Agricultural and Forestry Resources | ▪ Mineral Resources |
| ▪ Air Quality | ▪ Noise |
| ▪ Biological Resources | ▪ Population and Housing |
| ▪ Cultural Resources | ▪ Public Services |
| ▪ Energy | ▪ Recreation |
| ▪ Geology and Soils | ▪ Transportation |
| ▪ Greenhouse Gas Emissions | ▪ Tribal Cultural Resources |
| ▪ Hazard and Hazardous Materials | ▪ Utilities and Service Systems |
| ▪ Hydrology and Water Quality | ▪ Wildfire |

1.3 Initial Study Public Review Process

The Initial Study and a Notice of Intent (NOI) to adopt this MND will be distributed to responsible and trustee agencies, other affected agencies, and other parties for a 30-day public review period.

Written comments regarding this MND should be addressed to:

Scott Speer
City of Manteca Development Services Department
1215 W. Center St. Suite 201
Manteca, CA 95337
sspeer@manteca.gov

1.4 Report Organization

This document has been organized into the following sections:

Section 1.0 – Introduction. This section provides an introduction and overview describing the conclusions of the Initial Study.

Section 2.0 – Project Description. This section identifies key project characteristics and includes a list of anticipated discretionary actions.

Section 3.0 – Initial Study Checklist. The Environmental Checklist Form provides an overview of the potential impacts that may or may not result from project implementation.

Section 4.0 – Environmental Factors Potentially Affected. This section identifies the environmental factors that could be potentially affected by the proposed project.

Section 5.0 – Environmental Evaluation. This section contains an analysis of environmental impacts identified in the environmental checklist.

Section 6.0 – References. The section identifies resources used to prepare the Initial Study.

2.0 DESCRIPTION OF PROPOSED PROJECT

2.1 Project Location

The project is located in in the City of Manteca within San Joaquin County, California. The project site is located near the center of the City of Manteca’s boundaries while downtown Manteca is located approximately 2 miles to the northeast. The site is directly south of the State Route (SR) 120 eastbound off ramp at Airport Way (Exit 3). The project is comprised of a single Assessor’s Parcel Number (APN), 226-160-21. Additionally, the project site is located at the intersection of Airport Way and West Atherton Drive. Please see **Figure 2-1: Regional Map** and **Figure 2-2: Local Vicinity Map**.

2.2 Environmental Setting

REGIONAL SETTING

The City of Manteca is located in central California, approximately 65 miles directly east of San Francisco and 12 miles south of Stockton. Manteca is located within an area of California called the Central Valley. This area is an elongated valley occupying the central region of California, running on average 50 miles wide and 400 miles from north to south (USGS, 2021). The project site falls within an area of the Central Valley called the San Joaquin Basin. The San Joaquin River flows through the basin with outlets to the San Francisco Bay and Pacific Ocean. The City of Manteca is located at the top northwest boundary of the basin. The project site is shown on the U.S. Geological Survey’s Lathrop, California, 7.5-minute quadrangle map (See **Figure 2-3: USGS Topographic Map**).

LOCAL SETTING

The project site is zoned CG (General Commercial) and designated as C (Commercial) under the Manteca General Plan. The area to the north of the project site is developed and includes commercial and residential uses as well as undeveloped areas with a zoning of CG and also has a designation of GC. To the south of the project site, development consists of residential with some agricultural uses and is zoned R-1 (One-Family Dwelling) and is designated LDR (Low Density Residential 2.1 to 8 dwelling units/acre). To the west of the proposed project, are a mix of commercial and residential uses with zonings of CG and R-1 and designations of GC and LDR. And to the east, the adjacent areas are mostly developed with residential with some undeveloped parcels with zonings of CG and R-1 and designations of GC and LDR (City of Manteca, 2023).

The project site is undeveloped land, with minimal brush scrub vegetation. The proposed project area has existing utility stubs provided on site, street lighting along Atherton Drive and Airport Way, and existing curbs, gutters, and sidewalks along the frontage of the parcel and the west side of the project site along Airport Way.

As stated previously, the project site itself is designated C in the General Plan and zoned CG and R-1 in the Municipal Code (City of Manteca, 2011). The Municipal Code describes CG as:

“... wholesale, warehousing, and heavy commercial uses, highway-oriented commercial retail, public and quasi-public uses, and similar and compatible uses. The designation is also intended to accommodate visitor lodging, commercial recreation and public

gathering facilities, such as amphitheaters, or public gardens. It also allows most neighborhood and mixed commercial uses.”

The Municipal Code also describes R-1 as:

“...designation allows for substantial flexibility in selecting dwelling unit types and parcel configurations to suit site conditions and housing needs. The types of dwelling units include small lots and clustered lots as well as conventional large-lot detached residences.”

The proposed development on the site would require project specific use permits depending on the commercial use.

2.3 Proposed Project

The proposed project, called WoodSpring Suites 120 Retail, proposes an 18.4-acre retail, commercial, and restaurant development that includes 12 separate buildings and parking located at the intersection of West Atherton Drive and South Airport Way. The proposed development can be defined by three major components: the general retail, restaurants, and convenience store and 12-fueling gas station, the hotel, and a car dealership. Please see **Figure 2-4: Proposed Site Plan**.

- Parcel 1: this contains the general retail, restaurants, and convenience store and 12-fueling gas station on approximately 11.02 acres.
 - The general retail would be approximately 58,000 square feet of space with 298 parking stalls.
 - The restaurant spaces would total approximately 13,900 square feet of space with 70 parking stalls.
 - The convenience store and gas station would total approximately 2,500 square feet with four parking stalls.
- Parcel 2: the hotel is four stories high on approximately 2.38 acres with 122 hotel rooms and 137 parking stalls.
- Parcel 3: The car dealership building would be approximately 30,942 square feet on about 5 acres which would contain 108 parking stalls.

The project site would have a total of six access points. Five of the six access points are located on West Atherton Drive with the sixth access point located on Airport Way. The eastern most access point would exclusively serve the proposed car dealership. A new traffic signal would be installed at the access point at the intersection of Sparrow Hawk Street. This access would provide one of the left turn out points from the project area. A third access point for the project area will be located on West Atherton Drive between Sage Sparrow Avenue and Sparrowhawk Street. The fourth access point, located on West Atherton Drive, directly across from Sage Sparrow Avenue, would serve the general retail stores and restaurants and, indirectly, the convenience store and gas station. This access would provide the second protected left turn out point from the project area. A fifth access point on West Atherton Drive, just south of the Sage Sparrow Avenue intersection, would serve the convenience store and gas station and the general retail stores and restaurants. Lastly, the sixth access point located on Airport Way north of the Airport Way/West Atherton Drive intersection, would serve the convenience store and gas station and the general

retail stores and restaurants. No access points would exist on the east bound CA-120 on-ramp. All uses within the project area would be accessible from the other parcels.

PROJECT COMPONENTS:

General Retail, Restaurants, and Convenience Store and Gas Station:

General Retail

The general retail, restaurants, and convenience store and gas station is located on Parcel 1 which is in the southwest corner of the proposed project site. The entire parcel is approximately 11.02 acres and is the biggest of the three parcels that comprise the proposed project site. The general retail component would include 58,000 square feet of retail space and 298 parking stalls and would be made up of five buildings in which three of the five buildings would be used for major retail stores while other two would be smaller in size. Specifically, the biggest major retail building would be 23,000 square feet, with the second biggest being 11,000 square feet, and the third biggest being 11,000 square feet. The remaining smaller retail buildings would be 8,000 and 6,000 square feet.

Most of the general retail buildings are clustered in the northeast portion of Parcel 1. In fact, all three of the major retail buildings plus one of the smaller retail buildings (6,000 square feet) are clustered in the northeast portion of the site. The remaining, smaller retail building is located across the internal parking lot on the southern portion of Parcel 1, close to one of the three access points to Parcel 1.

Restaurants

The restaurants component of Parcel 1 totals 13,900 square feet and incorporates 70 parking stalls. In total, there are four buildings where the restaurants would be located. The first three buildings, or pads as named in the site plan, are 2,800 square feet each. The fourth pad is 5,500 square feet. Pads one through three are clustered along the northwest portion of the parcel while the fourth pad is in the southeast portion of the parcel.

Convenience Store and Gas Station

The convenience store and gas station occupy the southwest portion of Parcel 1. Square footage for the building housing the convenience store would total 2,500 square feet and would include four parking stalls. In addition to the convenience store, a gas station is also proposed to be built which would have three fuel islands with 12 fueling positions. Three proposed underground fuel tanks would be located directly west of the building that would supply the site. The gas station would have an annual throughput of 2,862,000 gallons of unleaded fuel and 2,438,000 gallons of diesel fuel on an annual basis.

Hotel:

The hotel is located in the northeast portion of the proposed project site which is in the middle parcel, Parcel 2. The four-story building would contain 122 hotel rooms with 137 parking stalls on approximately 2.38 acres. As stated previously, the entrance into the hotel area is located on West Atherton Drive, across from Sparrowhawk Street. This is a shared access point with the proposed car dealership which is northeast of the hotel.

Car Dealership:

The proposed car dealership would be located on the approximately 5-acre northeastern parcel of the project site which is Parcel 3. The building is proposed to be approximately 30,942 square feet and would include 108 parking stalls. It is anticipated that the car dealership would include a sales showroom, sales and accounting offices, and a service area.

Stormwater

The site includes 2 bioretention basins, one in the southeast corner approximately 1,240 square feet and 1.5 feet deep, and the other on the southwest side approximately 2,150 square feet and 1.6 ft deep. Stormwater at the site would be collected and run through a catch basin with an oil & gas separator, to a bioretention basin, and then to a proposed 18-inch storm drain that would connect to an existing stormwater drain in West Atherton Drive.

Utilities

The project site would tie into existing water, stormwater, sewer, gas, electrical, and telecommunications utilities located within Atherton drive. Stormwater from the site would connect to an existing 18-inch stormwater drain in West Atherton Drive. The project also proposes tying a 6-inch sewer line into an existing 8-inch lateral sewer line, at a proposed manhole on the southern border of the project site off of West Atherton Drive.

Landscaping

Landscaping would be incorporated throughout the project site consistent with low impact development best practices and City requirements for commercial development projects.

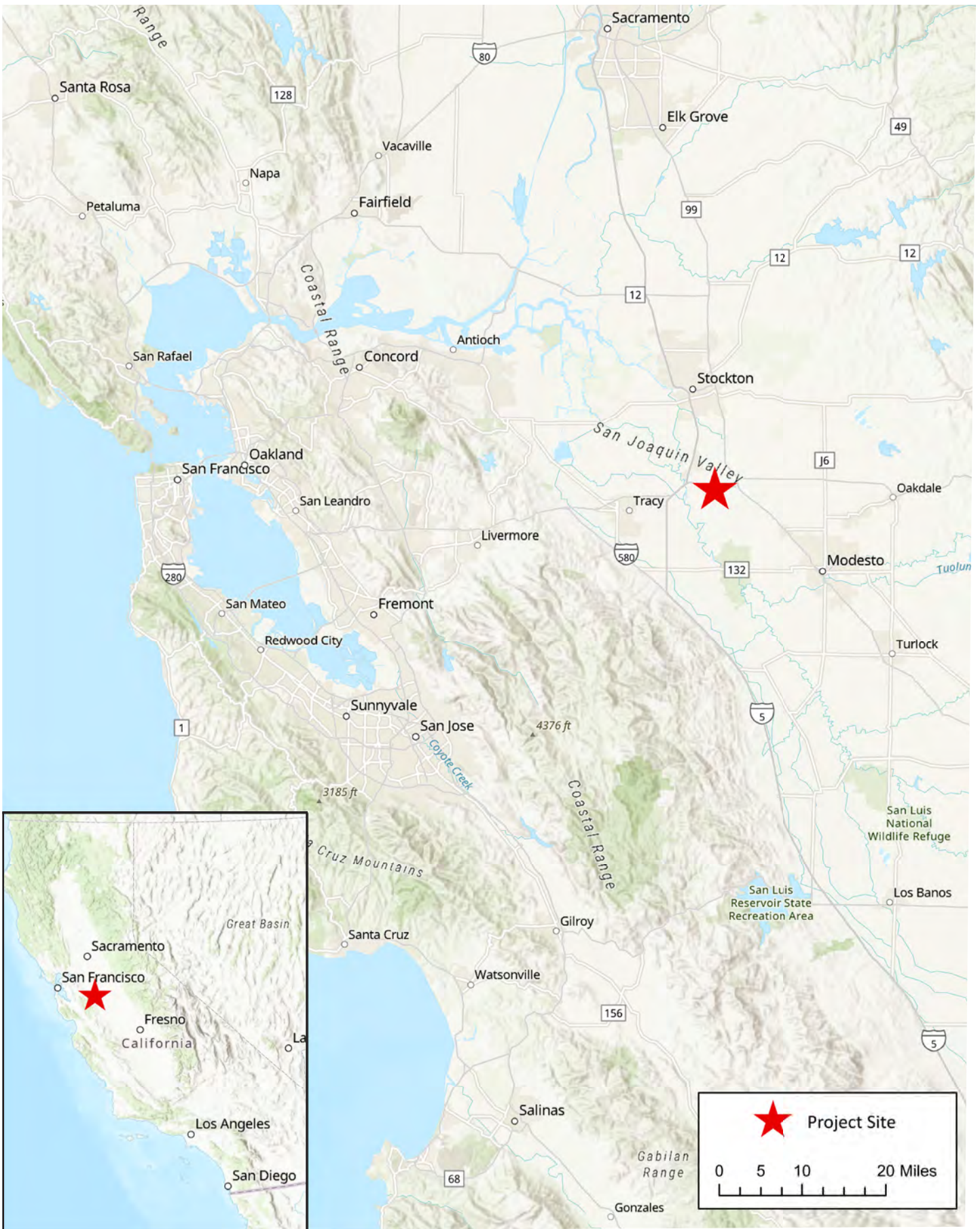
Offsite Improvements

Offsite improvements include the construction of two traffic signals and street median improvements at the intersections adjacent to the project site. The first traffic signal would be installed at the intersection of West Atherton Drive and Sparrowhawk Street. This traffic signal would control traffic coming in and out of the driveway of the commercial center. Street median improvements on West Atherton Drive include both raised and painted medians to guide traffic into appropriate turns lanes at the driveways and traffic signal. The improvements would occur along the project frontage of West Atherton Drive.

A traffic signal is proposed at the intersection of West Atherton Drive and Airport Way and is a condition of approval of another separate development project. This signal would control the movements of cars at this existing four-way intersection that is currently controlled with stop signs. Both raised and painted medians are proposed within Airport Way to guide traffic coming southbound into the intersection and into the right-in and right-out project driveway on Airport Drive. The improvements would occur along the project frontage of Airport Drive. If the traffic signal is not installed prior to occupancy of the proposed project, then the proposed project would be responsible for the signalization of this intersection.

Additional improvements are proposed at the intersection of West Atherton Drive and Sage Sparrow Avenue. Street median improvements at this intersection would include raised and painted medians along West Atherton to guide traffic into and out of the project driveway.

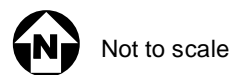
All of the offsite improvements would occur within the existing roadway or existing Right-of-Way. No additional Right-of-Way is required for the offsite improvements.



Source: ESRI, 2023

Figure 2-1: Regional Map

WoodSpring Suite 120
 Initial Study/Mitigative Negative Declaration





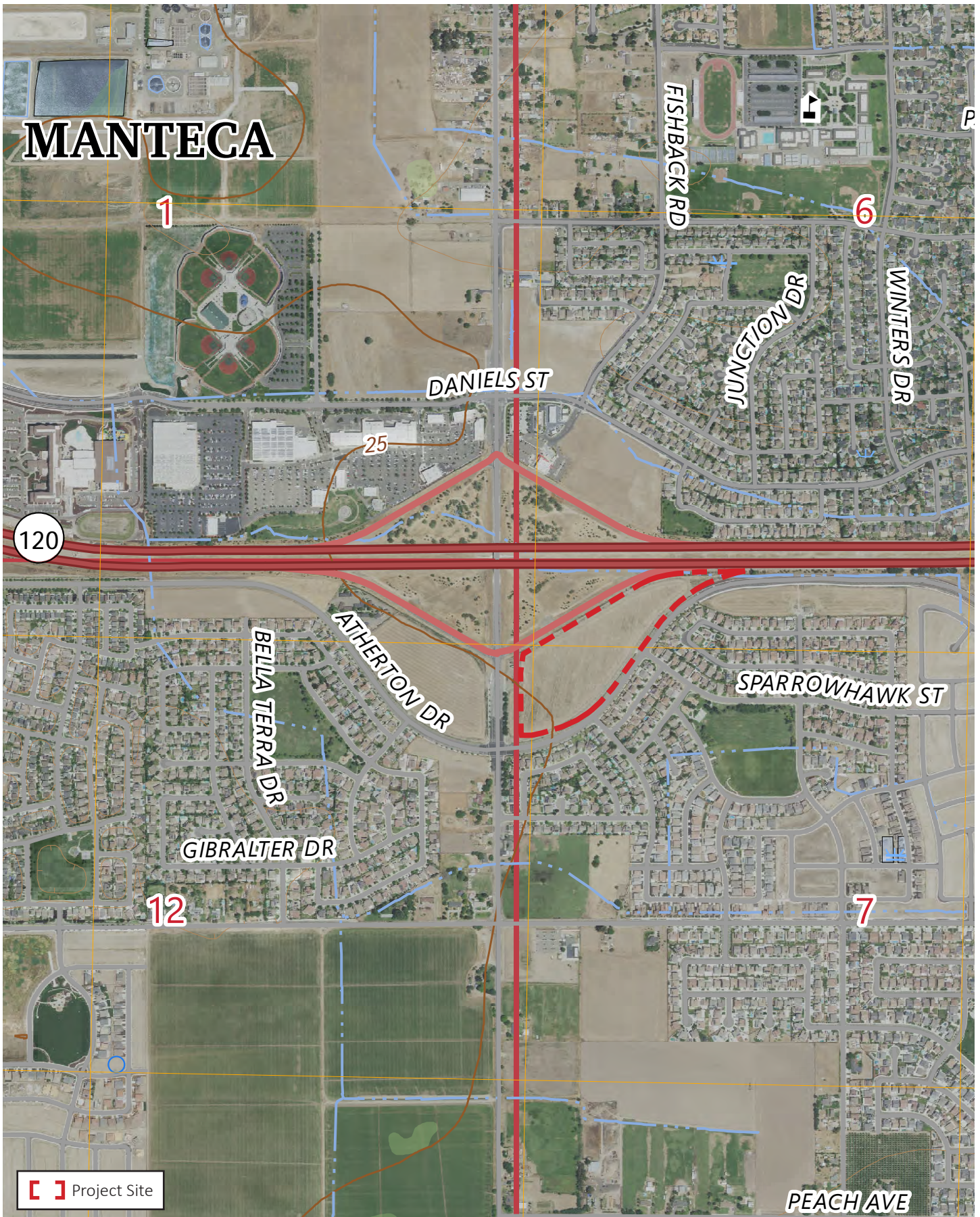
Source: ESRI, 2023

Figure 2-2: Local Vicinity Map

WoodSpring Suite 120
 Initial Study/Mitigated Negative Declaration




Not to scale



Source: USGS, 2023

Figure 2-3: USGS Topographic Map

WoodSpring Suite 120
 Initial Study/Mitigative Negative Declaration

 Not to scale

Kimley & Horn



RB-NEC Airport Way & Atherton Dr
 MANTECA, CALIFORNIA

Source: Reynolds & Brown, 2023

Figure 2-4: Proposed Site Plan
 WoodSpring Suite 120
 Initial Study/Mitigated Negative Declaration



Not to scale



3.0 INITIAL STUDY CHECKLIST

NOTE: The following is a sample form that may be tailored to satisfy individual agencies' needs and project circumstances. It may be used to meet the requirements for an initial study when the criteria set forth in CEQA Guidelines have been met. Substantial evidence of potential impacts that are not listed on this form must also be considered. The sample questions in this form are intended to encourage thoughtful assessment of impacts, and do not necessarily represent thresholds of significance.

1. Project title:

The WoodSpring Suites 120 Retail Project

2. Lead agency name and address:

The City of Manteca
Development Services Department
1215 W. Center St., Suite 201
Manteca, California 95337

3. Contact person and phone number:

Scott Speer, (209) 456.8565
sspeer@ci.manteca.ca.us

4. Project location:

Northeast Corner of West Atherton Drive and Airport Way
Manteca, California 95337

5. Project sponsor's name and address:

Drew Mickel, Vice President
Reynolds and Brown
1200 Concord Avenue, Suite 200
Concord, CA 94520

6. General plan designation:

Commercial (C)

7. Zoning:

General Commercial Zoning District (CG)

8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

The WoodSpring Suites 120 Retail project proposes an 18.4-acre mixed commercial use development, including retail stores, restaurants, a hotel, a car dealership, a convenience store, and a gas station. The project is currently vacant land with existing utility stubs provided on site, street lighting exists along West Atherton Drive and Airport way, and existing curb, gutter, sidewalk exist and appear to be of adequate width along the frontage of the parcel. Additional site improvements include, but are not limited to grading, landscaping, hardscape, and irrigation. For more details, please see the detailed project description in Section 2.3, above.

9. Surrounding land uses and setting: Briefly describe the project's surroundings:

The projects surroundings are generally designated as low density residential (LDR) in the General Land Use Plan to the immediate south and east, with General Commercial (GC) located west and northwest of the project site. The project is located north of the city limits with land previously disturbed for agriculture use, further south outside and inside the city.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

City of Manteca

- Adoption of the Initial Study/Mitigated Negative Declaration
- Approval of Minor Use Permit, Site Plan/Design Review/Tentative Parcel Map
- Grading and Improvement Plans
- Building Permits

San Joaquin Council of Governments

- Approval of Incidental Take Mitigation Measures

San Joaquin Valley Air Pollution Control District

- Authority to Construct/Permit to Operate

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

The City has notified California Native American tribes of the proposed project and an invitation to consult with the City as provided under Assembly Bill 52. The notifications were distributed based on a list provided by the NAHC of tribes who may have knowledge of cultural resources in the project area. These notification letters were distributed to identified Native American Tribes on **February 28, 2024**, with no response at the time of this publication.

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 Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

4.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact identified as “Less Than Significant With Mitigation Incorporated” as indicated by the checklist on the following pages.

- | | | |
|---|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Air Quality | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Recreation |
| <input checked="" type="checkbox"/> Agricultural and Forestry Resources | <input checked="" type="checkbox"/> Hydrology/Water Quality | <input checked="" type="checkbox"/> Transportation |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Land Use/Planning | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Utilities/Service Systems |
| <input type="checkbox"/> Energy | <input type="checkbox"/> Noise | <input type="checkbox"/> Wildfire |
| <input checked="" type="checkbox"/> Geology/Soils | <input type="checkbox"/> Population/Housing | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION:

On the basis of this initial evaluation (check one):

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

CERTIFICATION:

Signature

Date

5.0 ENVIRONMENTAL ANALYSIS

5.1 AESTHETICS

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c) 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 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?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

a) *Have a substantial adverse effect on a scenic vista?*

Less Than Significant Impact. Under CEQA, a scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the public. A vista is a view from a particular location or combination of locations; a scenic vista combines an aesthetically pleasing aspect, often natural, to the vista. While a scenic vista may be formally designated, they are often informal public views. An adverse effect to a scenic vista may result from a degradation of an existing vista or the loss of access to an existing viewpoint.

As outlined in the FEIR General Plan, on clear days distant views of the Sierra Nevada Mountains to the east and The Coast Range from the west can be seen from the City of Manteca. Most days these views are obstructed due to weather conditions, and therefore the proposed project would only intermittently obstruct views on clear days. The project site is in the southwest area within city boundaries. Locally, the project site is surrounded by agricultural fields to the south and the San Joaquin River to the west. The project would have a less than significant impact on views of the river, as the project lies on the same plane and is at a far enough distance where views would

not be possible from the project site. The project would fit in to the context of the existing development and not significantly alter the visual aesthetic of the surrounding area.

- b) *Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?*

Less than Significant Impact. The project site is in a relatively flat area between SR 120, to the north, a residential neighborhood to the south, and a vacant previously disturbed lot to the west. This area does not contain any aesthetically significant trees, rock outcroppings, or historical buildings. Additionally, the project site is not located near a scenic highway, the site is located approximately 17.2 miles southwest from the nearest California Scenic Highway 580 (DOT, 2018) and therefore would cause a less than significant impact to scenic resources.

- 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 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?*

Less Than Significant Impact. The project site is in an urbanized area, and the project does not conflict with the General Commercial zoning district it falls within. This zoning district is described in the Cities Municipal Code as

“...provid[ing] for wholesale, warehousing, and heavy commercial uses, highway-oriented commercial retail, public and quasi-public uses, and similar and compatible uses. The designation is also intended to accommodate visitor lodging, commercial recreation and public gathering facilities, such as amphitheaters, or public gardens. It also allows most neighborhood and mixed commercial uses.”

The specific project components would be required to determine allowable use and be required to obtain correct permitting and review prior to issuance of grading permits. The proposed uses including hotel, grocery, restaurants, and vehicle service stations are all allowed under this zoning district and fit in to the overall aesthetic landscape. The project would align with the General Plan’s Circulation Goals to improve the aesthetic quality in the built environment by having curbside landscaping, providing sidewalks and bike lanes where space is available. The project site includes landscaping plans consistent City guidelines and includes maintaining landscaping and a sidewalk to meet General Plan Guidelines. The site also proposes adequate and attractive signage to update the area and alert the public to the commercial uses at the project site. The project would also comply with all additional federal, state, and local regulations governing scenic quality. Therefore, impacts are less than significant.

- d) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Less Than Significant Impact. Due to the nature of the project, operational hours are anticipated to be 24 hours per day/7 days per week/ 365 days per year. Excessive or inappropriately directed lighting can adversely impact nighttime views by reducing the ability to see the night sky and stars.

Glare can be caused from unshielded or misdirected lighting sources. Reflective surfaces (i.e., polished metal) can also cause glare. Impacts associated with glare range from simple nuisance to potentially dangerous situations (i.e., if glare is directed into the eyes of motorists). Existing outdoor lighting at and near the project site is associated with commercial/retail, public/institutional, and street lighting typical of suburban areas. The proposed project would generate lighting from two primary sources: lighting from building interiors that would pass through windows, and lighting from exterior sources (e.g., street lighting, vehicles, security lighting, and landscape lighting). Lighting associated with the project would not be directed towards adjacent properties across Atherton Drive toward the residential community.

The City of Manteca's Municipal code Section 15.50.060 General Lighting Standards outlines outdoor lighting standards. This includes nuisance prevention which would require all lighting to be directed downward, toward structures, and shielded to prevent glare and light pollution, maintenance, shielding which would reduce light trespass, level of illumination, max height, energy efficient fixtures, etc. The project would adhere to these standards. Further, the City would also review new lighting for conformance with the 2019 California Green Building Standards Code (CALGreen) (California Code of Regulations [CCR] Title 24 Part 11) such that only the minimum amount of lighting is used, and no light spillage occurs. The project would adhere to the City's Municipal Code, California's Green Buildings Standards Code, and all additional federal, state, or local regulations. Therefore, resulting in a less than significant impact concerning a new source of substantial light or glare.

Cumulative Impacts

The potential aesthetic impacts related to views, aesthetics, and light and glare are site-specific. As discussed above, project-related impacts to scenic vistas would be less than significant, and the proposed project would not result in any impacts to on-site visual resources because the project would retain and enhance the visual characteristic of the site. In addition, the proposed project would also be consistent and comply with the City's land use, scenic quality and development regulations contained in the City's Municipal Code and General Plan. Lighting and sources of glare, while not always site-specific, would be consistent with much of the surrounding urban area and would be used during similar hours as surrounding uses. Therefore, while the proposed project in conjunction with past, present, and reasonably foreseeable development would change the appearance of the site, all development projects follow applicable local planning and design guidelines regarding roadway design including materials, coloration, and landscaping as specified in the City's Municipal Code regarding lighting standards and limitation. Therefore, aesthetic impacts are not expected to be cumulatively considerable, and impacts would be less than significant.

5.2 AGRICULTURE AND FORESTRY RESOURCES

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:</p>				
<p>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?</p>		X		
<p>b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?</p>			X	
<p>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))?</p>			X	
<p>d) Result in the loss of forest land or conversion of forest land to non-forest use?</p>			X	
<p>e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?</p>		X		

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?*

Less Than Significant Impact with Mitigation. The project site is currently zoned as General Commercial (CG) (City of Manteca, 2023). The project site contains approximately 1.6 acres designated as Farmland of Statewide Importance with the remaining approximately 16.8 acres

designated as Prime Farmland as shown on the California Important Farmland Finder Map (California Department of Conservation, 2018). The proposed Project is subject to the City's agricultural mitigation fee program and the San Joaquin County Multispecies Habitat Conservation & Open Space Plan (SJMSCP) conditions. Payment of these fees is standard for the conversion of farmland in the City of Manteca. Different types of land require different levels of mitigation. The entirety of San Joaquin County is mapped according to each land use category so that landowners, project proponents and project reviewers are aware of the applicable SJMSCP fees for the proposed development. The appropriate fees are collected by the City and remitted to SJCOG for administration. SJCOG uses the funds to preserve open space land of comparable types throughout the County, often coordinating with other private or public land trusts to purchase conservation easements or buy land outright for preservation. Fees are automatically adjusted on an annual basis. The project proponent will be required to pay the established fees on a per-acre basis for the loss of Prime Farmland and Farmland of Statewide Importance. Fees paid toward the City's program shall be used to fund conservation easements on comparable or better agricultural lands to provide compensatory mitigation. Implementation of the following mitigation would ensure there is a less than significant impact relative to this issue. Please see **Figure 5-1: Farmland Map** and **Figure 5-2: Multi-Species Habitat Conservation and Open Space Plan**.

Mitigation Measure AG-1: Prior to the conversion of important farmland on the project site, the project applicant shall participate in the City's agricultural mitigation fee program and the SJMSCP by paying the established fees on a per-acre basis for the loss of important farmland. Fees paid toward the City's program shall be used to fund conservation easements on comparable or better agricultural lands to provide compensatory mitigation.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less Than Significant Impact. Refer to a) The project site is not under a Williamson Act contract and does not have existing zoning for agricultural use (California Department of Conservation, 2022). Therefore, the proposed project would have a less than significant impact to 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))?

Less Than Significant Impact. The project is not zoned as forest land, timberland, or timberland production and no land in the project vicinity is. Therefore, the project would not conflict or cause rezoning of any forest land (as defined in Public Resource Code section 12220(g)) timberland (as defined by Public Resources Code section 4526), or zoned Timberland Production (as defined by Government Code section 51104(g)). Therefore, impacts related to the loss of this agricultural resource are less than significant.

d) *Result in the loss of forest land or conversion of forest land to non-forest use?*

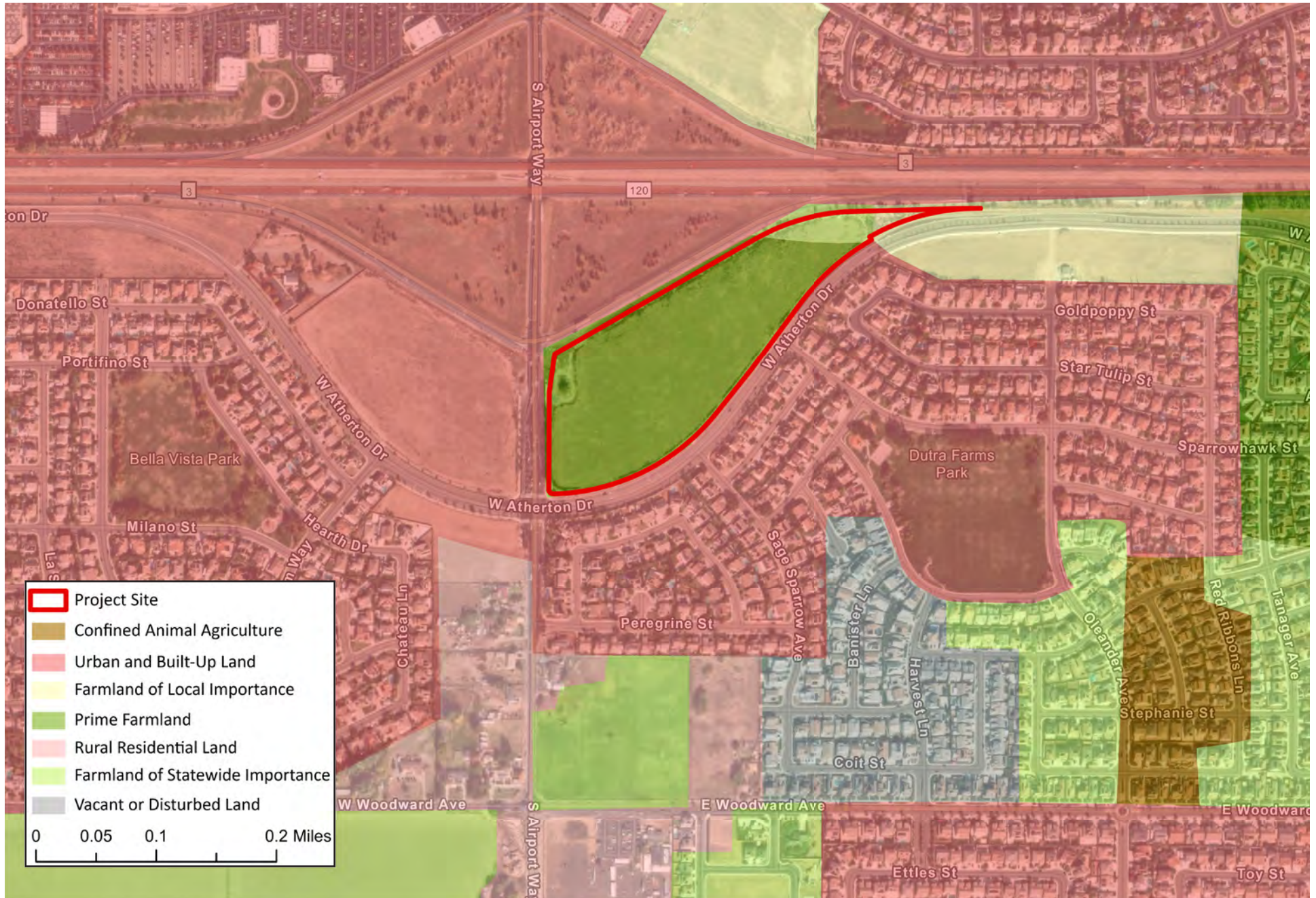
Less Than Significant Impact. Refer to c)

e) *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

Less Than Significant Impact with Mitigation. Refer to a) Less Than Significant. Refer to c)

Cumulative Impacts

The proposed project would have no significant impact with mitigation on agriculture and forestry resources since the surrounding uses are currently used for commercial, residential, public use, and industrial purposes. The project site is zoned as General Commercial. The project is not zoned as forest land, timberland, or timberland. Notably, the project site is located on Prime Farmland and Farmland of Statewide Importance. However, implementation of Mitigation Measure AG-1 would result in no significant impact with mitigation. Additionally, the current zoning does not conflict with a Williamson Act contract. Therefore, the project would not contribute to a cumulatively considerable impact to agriculture and forestry given the mitigation measure.



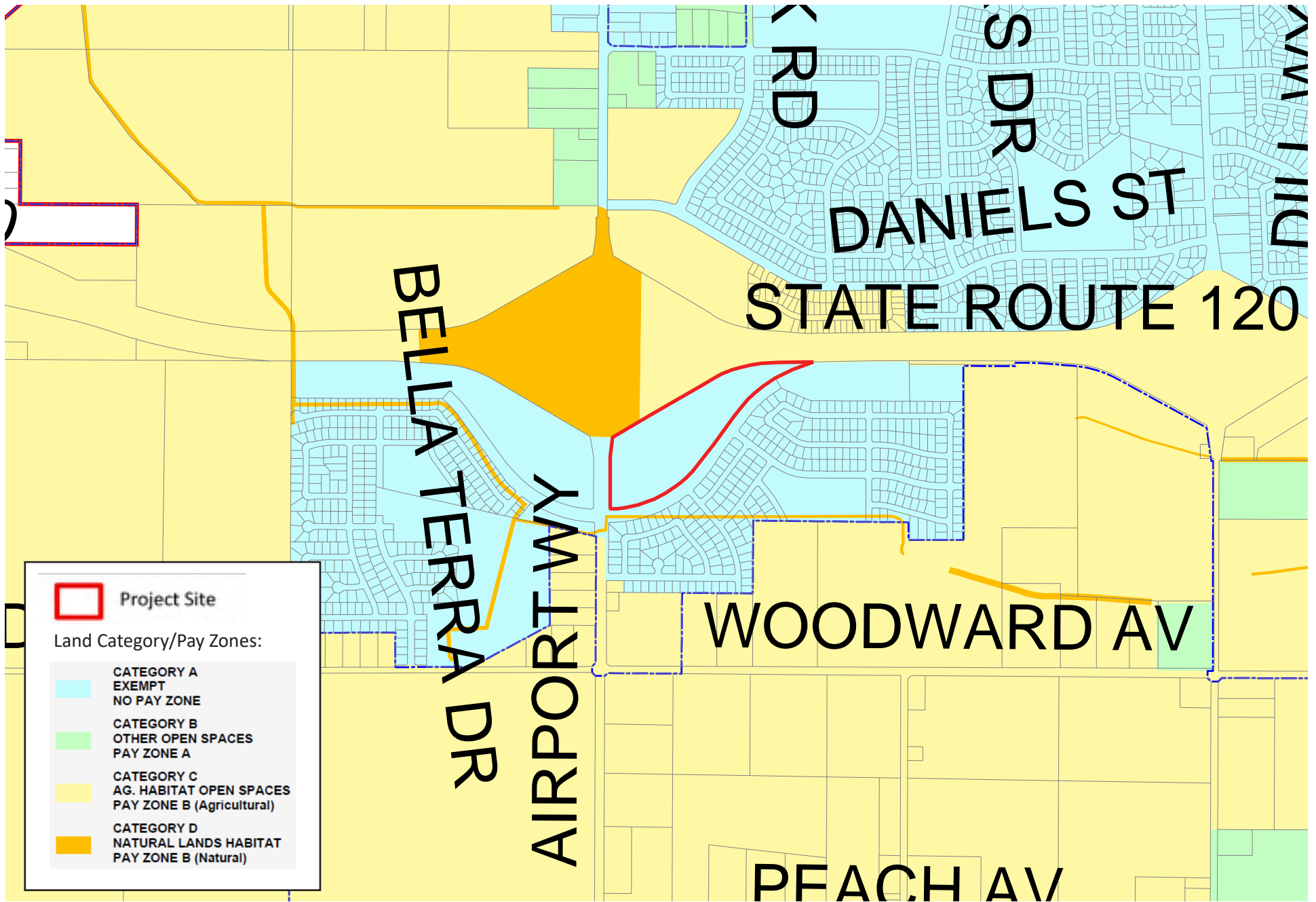
Source: California Department of Conservation, 2022

Figure 5-1: Farmland Map

WoodSpring Suite 120
 Initial Study/Mitigated Negative Declaration



Not to scale



Source: San Joaquin Council of Governments, 2004

Figure 5-2: Multi-Species Habitat Conservation and Open Space Plan

WoodSpring Suite 120
Initial Study/Mitigated Negative Declaration



Not to scale

Kimley»Horn

5.3 AIR QUALITY

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
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?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?			X	

REGULATORY SETTING

Federal

Federal Clean Air Act

Air quality is federally protected by the Federal Clean Air Act (FCAA) and its amendments. Under the FCAA, the EPA developed the primary and secondary National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants including ozone, NO₂, CO, SO₂, PM₁₀, PM_{2.5}, and lead. Depending on whether the standards are met or exceeded, the local air basin is classified as in “attainment” or “nonattainment.” Some areas are unclassified, which means no monitoring data are available. Unclassified areas are considered to be in attainment. Proposed projects in or near nonattainment areas could be subject to more stringent air-permitting requirements. The FCAA requires that each state prepare a State Implementation Plan (SIP) to demonstrate how it will attain the NAAQS within the federally imposed deadlines.

The U.S. Environmental Protection Agency (EPA) has designated enforcement of air pollution control regulations to the individual states. Applicable federal standards are summarized in *Table 1: State and Federal Ambient Air Quality Standards*.

State*California Air Resources Board (CARB)*

CARB administers California’s air quality policy. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in *Table 1: State and Federal Ambient Air Quality Standards*, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates. In general, the San Joaquin County experiences low concentrations of most pollutants when compared to federal standards, except for O₃ and PM, for which standards are exceeded periodically. San Joaquin Valley Air Basin (SJVAB) has a State designation Attainment or Unclassified for all criteria pollutants except for ozone, PM₁₀ and PM_{2.5}. SJVAB has a national designation of either “Unclassified” or “Attainment” for all criteria pollutants except for Ozone and PM_{2.5}.

The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for the preparation of the SIP for meeting federal clean air standards for the State of California. Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events such as wildfires, volcanoes, etc. are not considered violations of a State standard, and are not used as a basis for designating areas as nonattainment. The applicable State standards are summarized in *Table 1*.

Table 1: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards ¹		Federal Standards ²	
		Concentration	Attainment Status	Concentration ³	Attainment Status
Ozone (O ₃)	8 Hour	0.070 ppm (137 µg/m ³)	N ⁹	0.070 ppm	N ⁴
	1 Hour	0.09 ppm (180 µg/m ³)	N	NA	N/A ⁵
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m ³)	A	9 ppm (10 mg/m ³)	A ⁶
	1 Hour	20 ppm (23 mg/m ³)	A	35 ppm (40 mg/m ³)	A
Nitrogen Dioxide (NO ₂)	1 Hour	0.18 ppm (339 µg/m ³)	A	0.100 ppm ¹¹	U
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	-	0.053 ppm (100 µg/m ³)	A
Sulfur Dioxide ¹² (SO ₂)	24 Hour	0.04 ppm (105 µg/m ³)	A	0.14 ppm (365 µg/m ³)	A
	1 Hour	0.25 ppm (655 µg/m ³)	A	0.075 ppm (196 µg/m ³)	A

	Annual Arithmetic Mean	NA	-	0.03 ppm (80 µg/m ³)	A
Pollutant	Averaging Time	State Standards ¹		Federal Standards ²	
		Concentration	Attainment Status	Concentration ³	Attainment Status
Particulate Matter (PM ₁₀)	24-Hour	50 µg/m ³	N	150 µg/m ³	-U
	Annual Arithmetic Mean	20 µg/m ³	N ⁷	NA	-
Fine Particulate Matter (PM _{2.5}) ¹⁵	24-Hour	NA	-	35 µg/m ³	U/A
	Annual Arithmetic Mean	12 µg/m ³	N ⁷	12 µg/m ³	N
Sulfates (SO ₄₋₂)	24 Hour	25 µg/m ³	A	NA	-
Lead (Pb) ^{13, 14}	30-Day Average	1.5 µg/m ³	-	NA	A
	Calendar Quarter	NA	-	1.5 µg/m ³	A
	Rolling 3-Month Average	NA	-	0.15 µg/m ³	-
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 µg/m ³)	U	NA	-
Vinyl Chloride (C ₂ H ₃ Cl)	24 Hour	0.01 ppm (26 µg/m ³)	-	NA	-
Visibility Reducing Particles ⁸	8 Hour (10:00 to 18:00 PST)	-	U	-	-

A = attainment; N = nonattainment; U = unclassified; N/A = not applicable or no applicable standard; ppm = parts per million; µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; - = not indicated or no information available.

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM₁₀, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM₁₀ annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.
2. National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.070 ppm (70 ppb) or less. The 24-hour PM₁₀ standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m³. The 24-hour PM_{2.5} standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m³.
Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM₁₀ is met if the 3-year average falls below the standard at every site. The annual PM_{2.5} standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.
3. National air quality standards are set by the EPA at levels determined to be protective of public health with an adequate margin of safety.
4. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. EPA will make recommendations on attainment designations by October 1, 2016, and issue final designations October 1, 2017. Nonattainment areas will have until 2020 to late 2037 to meet the health standard, with attainment dates varying based on the ozone level in the area.

5. The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.
6. In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
7. In June 2002, CARB established new annual standards for PM_{2.5} and PM₁₀.
8. Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
9. The 8-hour CA ozone standard was approved by the Air Resources Board on April 28, 2005 and became effective on May 17, 2006.
10. On January 9, 2013, EPA issued a final rule to determine that the Bay Area attains the 24-hour PM_{2.5} national standard. This EPA rule suspends key SIP requirements as long as monitoring data continues to show that the Bay Area attains the standard. Despite this EPA action, the Bay Area will continue to be designated as “nonattainment” for the national 24-hour PM_{2.5} standard until such time as the Air District submits a “redesignation request” and a “maintenance plan” to EPA, and EPA approves the proposed redesignation.
11. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100ppm (effective January 22, 2010). The US Environmental Protection Agency (EPA) expects to make a designation for the Bay Area by the end of 2017.
12. On June 2, 2010, the U.S. EPA established a new 1-hour SO₂ standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO₂ NAAQS however must continue to be used until one year following U.S. EPA initial designations of the new 1-hour SO₂ NAAQS.
13. CARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure below which there are no adverse health effects determined.
14. National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.
15. In December 2012, EPA strengthened the annual PM_{2.5} National Ambient Air Quality Standards (NAAQS) from 15.0 to 12.0 micrograms per cubic meter (µg/m³). In December 2014, EPA issued final area designations for the 2012 primary annual PM_{2.5} NAAQS. Areas designated “unclassifiable/attainment” must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Source: Bay Area Air Quality Management District, *Air Quality Standards and Attainment Status*, 2017 <https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status#:~:text=%E2%80%9CAttainment%E2%80%9D%20status%20for%20a%20pollutant,standards%20are%20met%20and%20maintained>

Hazardous Air Pollutants and Toxic Air Contaminants

Toxic Air Contaminants (TACs), or in federal parlance, Hazardous Air Pollutants (HAPs), are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; or short-term acute effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established. According to the OEHHA, cancer risk can be expressed both in terms of expected

incremental incidence population-wide and as the maximum incremental increase in lifetime for an individual receptor¹.

Regional

San Joaquin Valley Air Pollution Control District (SJVAPCD)

The proposed project lies within the northern portion of the San Joaquin Valley Air Basin (SJVAB). The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over most air quality matters in the SJVAB and is tasked with implementing programs and regulations required by the federal and State Clean Air Acts. If a project is found to interfere with the region's ability to comply with federal and State air quality standards, local governments then need to consider project modifications or provide mitigation measures to eliminate the inconsistency of the project plans. In order for a project to be considered "consistent" with the latest Air Quality Plan (AQP), the project must be consistent with the goals, objectives, and assumptions in the respective plan to achieve Federal and State air quality standards. Additionally, both construction-related and long-term emissions are required to be quantified and compared to the SJVAPCD significance thresholds.

Clean Air Plan

Air quality plans developed to meet federal requirements are referred to as State Implementation Plans. The federal and state Clean Air Acts require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM₁₀ standard). The SJVAQMD is responsible for developing a Clean Air Plan, which guides the region's air quality planning efforts to attain the CAAQS. The SJVAQMD adopted the 2022 Ozone Plan and 2018 PM_{2.5} Plan.

SJVAQMD periodically develops air quality plans that outline the regional strategy to improve air quality and protect the climate. The most recent plan, 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards, includes a wide range of control measures designed to reduce emissions of air pollutants and GHGs.

Local

City of Manteca Municipal Code

Chapter 17.58 of the Manteca Municipal Code describes the odor, particulate matter, and air containment standards (consistent with the rules and regulations of the SJVAPCD and the California Health and Safety Code). Chapter 15.62 of the Municipal Code provides expedited permitting procedures for electric vehicle charging stations. Furthermore, Chapter 15.60 describes the solar energy system requirements associated with small residential rooftop solar energy systems within the City.

¹ California Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Risk Assessment Guidance Manual for Preparation of Health Risk Assessments*, February 2015.
<https://oehha.ca.gov/media/downloads/crnrr/2015guidancemanual.pdf>, page 8-15, Accessed July 26, 2023.

City of Manteca General Plan

The Manteca General Plan Update Resource Conservation Element includes the following goal for Air Quality:

Goal RC-5: Protect the health and welfare of city residents and visitors by promoting development and planning practices that are compatible with federal, state, and local air quality standards and regulations and implement regional efforts to improve air quality.

The Manteca General Plan Update Resource Conservation Element includes the following policies for Air Quality:

Policy RC-5.1: Coordinate with the San Joaquin Valley Air Pollution Control District (Air District), San Joaquin Council of Governments, and the California Air Resources Board (State Air Board), and other agencies to develop and implement regional and county plans, programs, and mitigation measures that address cross-jurisdictional and regional air quality impacts, including land use, transportation, and climate change impacts, and incorporate the relevant provisions of those plans into City planning and project review procedures. Also cooperate with the Air District, SJCOG, and State Air Board in:

- Enforcing the provisions of the California and Federal Clean Air Acts, state and regional policies, and established standards for air quality.
- Identifying baseline air pollutant and greenhouse gas emissions.
- Encouraging economy zero emission or alternative fuel city vehicle fleets, when feasible.
- Developing consistent procedures for evaluating and mitigating project-specific and cumulative air quality impacts of projects.
- Promoting participation of major existing and new employers in the transportation demand management (TDM) program facilitated by the San Joaquin Council of Governments.

Policy RC-5.2: Minimize exposure of the public to toxic or harmful air emissions and odors through requiring an adequate buffer or distance between residential and other sensitive land uses and land uses that typically generate air pollutants, toxic air contaminants, or obnoxious fumes or odors, including but not limited to industrial, manufacturing, and processing facilities, highways, and rail lines and, where uses or facilities pose substantial health risks, ensure that a Health Risk Assessment is conducted to identify and mitigate exposure to toxic air contaminants.

Policy RC-5.3: Require construction and operation of new development to be managed to minimize fugitive dust and air pollutant emissions.

Policy RC-5.4: Require installation of energy-efficient appliances and equipment, including wood-burning devices, in development projects to meet current standards for controlling air pollution, including particulate matter and toxic air contaminants.

Policy RC-5.5: Require and/or cooperate with the Air District to ensure that burning of any combustible material within the City is consistent with Air District regulations to minimize particulate air pollution.

Policy RC-5.6: Encourage and support the regional Sustainable Communities Strategy that integrates planning for growth, transportation, land use, housing, and sustainability to meet State greenhouse reduction goals.

The Manteca General Plan Update Resource Conservation Element includes the following implementation strategies for Air Quality:

Implementation RC-5b: Review development, land use, transportation, and other projects that are subject to CEQA for potentially significant climate change and air quality impacts, including toxic and hazardous emissions and require that projects provide adequate, appropriate, and cost-effective mitigation measures reduce significant and potentially significant impacts. This includes, but is not limited to, the following:

- Use of the Air District “Guide for Assessing and Mitigating Air Quality Impacts”, as may be amended or replaced from time to time, in identifying thresholds, evaluating potential project and cumulative impacts, and determining appropriate mitigation measures;
- Contact the Air District for comment regarding potential impacts and mitigation measures as part of the evaluation of air quality effects of discretionary projects that are subject to CEQA;
- Require projects to participate in regional air quality mitigation strategies, including Air District-required regulations, as well as recommended best management practices when applicable and appropriate;
- Promote the use of new and replacement fuel storage tanks at refueling stations that are clean fuel compatible, if technically and economically feasible;
- The use of energy efficient lighting (including controls) and process systems beyond Title 24 requirements shall be encouraged where practicable (e.g., water heating, furnaces, boiler units, etc.);
- The use of energy efficient automated controls for air conditioning beyond Title 24 requirements shall be encouraged where practicable; and
- Promote solar access through building siting to maximize natural heating and cooling, and landscaping to aid passive cooling and to protect from winds;
- The developer of a sensitive air pollution receptor shall submit documentation that the project design includes appropriate buffering (e.g., setbacks, landscaping) to separate the use from highways, arterial streets, hazardous material locations and other sources of air pollution or odor;

- Identify sources of toxic air emissions and, if appropriate, require preparation of a health risk assessment in accordance with Air District-recommended procedures; and
- Circulate the environmental documents for projects with significant air quality impacts to the Air District for review and comment.

Implementation RC-5c: Review area and stationary source projects that could have a significant air quality impact, either individually or cumulatively, to identify the significance of potential impacts and ensure that adequate air quality mitigation is incorporated into the project, including:

- The use of best available and economically feasible control technology for stationary industrial sources;
- All applicable particulate matter control requirements of Air District Regulation VIII;
- The use of new and replacement fuel storage tanks at refueling stations that are clean fuel compatible, if technically and economically feasible;
- Provision of adequate electric or natural gas outlets to encourage use of natural gas or electric barbecues and electric gardening equipment; and
- Use of alternative energy sources.

Implementation RC-5d: Maintain adequate data to analyze cumulative land use impacts on air quality and climate change. This includes tracking proposed, planned, 8. Resource Conservation 8-15 Adoption Draft and approved General Plan amendments, development, and land use decisions so that projects can be evaluated for cumulative air quality impacts, including impacts associated with transportation and land use decisions.

Implementation RC-5f: Construction activity plans shall comply with Air District Rule 8021, including implementation of all required dust control measures and shall, where required, provide a dust management plan to prevent fugitive dust from leaving the property boundaries and causing a public nuisance or a violation of an ambient air standard.

- Project development applicants shall be responsible for ensuring that all adequate dust control measures are implemented in a timely manner during all phases of project development and construction.

THRESHOLDS

The City of Manteca, including the project site, is located within the northern portion of the San Joaquin Valley Air Basin (Basin) and is within the jurisdictional boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAB area is currently designated as a nonattainment area for the State and federal ozone, State and federal particulate matter 2.5 microns in diameter (PM_{2.5}), and State particulate matter 10 microns in diameter (PM₁₀) standards. The SJVAB is designated attainment or

unclassified for all other ambient air quality standards (AAQS). It should be noted that although the U.S. Environmental Protection Agency (EPA) revoked their 1-hour ozone standard in 2005, in May of 2016, the EPA proposed findings that the SJVAB was in attainment of the 1-hour ozone standard.

In compliance with regulations, due to the nonattainment designations of the area, the SJVAPCD periodically prepares and updates air quality plans that provide emission reduction strategies to achieve attainment of the AAQS, including control strategies to reduce air pollutant emissions through regulations, incentive programs, public education, and partnerships with other agencies. The most recent ozone plan is the 2016 Ozone Plan for the 2008 8-Hour Ozone Standard, which was adopted by the SJVAPCD on June 16, 2016. The California Air Resources Board (CARB) subsequently conducted a public meeting to consider approval of the 2016 Ozone Plan for the 2008 8-Hour Ozone Standard and approved the plan on July 21, 2016. Additionally, the most recent federal attainment plan for PM is the 2016 Plan for the 1997 PM_{2.5} Standard, which was approved by the District Governing Board on April 16, 2015.

The aforementioned air quality plans contain mobile source controls, stationary source controls, and transportation control measures (TCMs) to be implemented in the region to attain the State and federal standards within the SJVAB. Adopted SJVAPCD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated non-attainment, consistent with applicable air quality plans. The SJVAPCD has established broad significance thresholds associated with the construction and operation emissions for various criteria pollutants including ozone precursors such as reactive organic gases (ROG) and oxides of nitrogen (NO_x), as well as for PM₁₀, PM_{2.5}, sulfur oxide (SO_x), and carbon monoxide (CO) expressed in tons per year. Thus, by exceeding the SJVAPCD's mass emission thresholds for operational emissions of ROG, NO_x, PM₁₀, PM_{2.5}, SO_x, or CO a project would be considered to conflict with or obstruct implementation of the SJVAPCD's air quality planning efforts. The SJVAPCD's adopted thresholds of significance for criteria pollutant emissions are presented in *Table 2: SJVAPCD Criteria Pollutant Thresholds of Significance*. If the proposed project's emissions exceed the applicable thresholds of significance presented in the table, the project could violate an air quality standard, contribute to an existing or projected air quality violation or conflict with or obstruct implementation of the applicable air quality plans.

Table 2: SJVAPCD Criteria Pollutant Thresholds of Significance

Criteria Air Pollutants and Precursors (Regional)	Construction-Related	Operational-Related
	Average Annual Emissions (tons/year)	Annual Average Emission (tons/year)
Reactive Organic Gases (ROG)	10	10
Nitrogen Oxides (NO _x)	10	10
Carbon Monoxide (CO)	100	100
Sulfur Oxides (SO _x)	27	27
Coarse Particulates (PM ₁₀)	15	15
Fine Particulates (PM _{2.5})	15	15

Source: SJVAPCD, March 19, 2015.

ENVIRONMENTAL IMPACTS

a) *Conflict with or obstruct implementation of the applicable air quality plan?*

Less Than Significant Impact. The SJVAPCD is tasked with implementing programs and regulations required by the Federal CAA and the California CAA. In that capacity, the SJVAPCD has prepared plans to attain Federal and State ambient air quality standards. To achieve attainment with the standards, the SJVAPCD has established thresholds of significance for criteria pollutant emissions in their SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (2015). Projects with emissions below the thresholds of significance for criteria pollutants would be determined to “Not conflict or obstruct implementation of the District’s air quality plan”. As discussed in Threshold AQ-b below, the project would not exceed any SJVAPCD criteria pollutant thresholds during construction or operations. Therefore, the project would not conflict with or delay the implementation of SJVAPCD attainment plans and would result in a less than significant impact.

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?*

Less than Significant Impact.

Construction Emissions

Project construction activities would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the project area include ozone-precursor pollutants (i.e., ROG and NO_x) and PM₁₀ and PM_{2.5}. Construction-generated emissions are short term and temporary, lasting only while construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SJVAPCD’s thresholds of significance.

Construction results in the temporary generation of emissions during site preparation, site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities, as well as weather conditions and the appropriate application of water.

The duration of construction activities associated with the project are estimated to last approximately 30 months, beginning in March 2024 and concluding at the end of August 2026. The project’s construction-related emissions were calculated using the SJVAPCD-approved CalEEMod computer program², which is designed to model emissions for land use development projects, based on typical construction requirements. Project site preparation is anticipated to begin in March 2024 and last approximately one month. Project grading, building construction, paving and architectural coating is anticipated to occur in phases over the remaining 28 months. The project would include approximately 30,000 cubic yards (cy) of balanced cut and fill. Construction is

² California Emissions Estimator Model (CalEEMod) Version 2022.1.1.

modeled to be completed August 2026. The exact construction timeline is unknown; however, to be conservative, earlier dates were utilized in the modeling. This approach is conservative given that emissions factors decrease in future years due to regulatory and technological improvements and fleet turnover. See Appendix A: Air Quality Modeling Data for additional information regarding the construction assumptions used in this analysis. The project’s predicted maximum daily construction-related emissions are summarized in *Table 3: Construction-Related Emissions*.

Table 3: Construction-Related Emissions

Construction Year	Pollutant (maximum tons per year) ¹					
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO _x)	Carbon Monoxide (CO)	Sulfur Oxides (SO _x)	Coarse Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Project Emissions						
2024	0.17	1.48	1.80	0.00	0.21	0.12
2025	0.46	1.64	2.36	0.00	0.19	0.09
2026	0.38	0.94	1.41	0.00	0.11	0.05
Maximum	0.46	1.64	2.36	0.00	0.21	0.12
<i>SJVAPCD Significance Threshold</i> ²	10	10	100	27	15	15
Exceed SJVAPCD Threshold?	No	No	No	No	No	No
1. These emissions reflect CalEEMod “mitigated” output, which accounts for compliance with SJVAPCD’s Rule 9510 (Indirect Source Review) and implementation of the project’s fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 miles per hour. 2. SJVAPCD, August 2015. Source: Refer to the CalEEMod version 2022.1.1 outputs provided in Appendix A.						

Fugitive Dust Emissions. Fugitive dust emissions are associated with land clearing, ground excavation, cut-and-fill operations, demolition, and truck travel on unpaved roadways. Dust emissions also vary substantially from day to day, depending on the level of activity, the specific operations, and weather conditions. Fugitive dust emissions may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the project vicinity. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. However, the project would be consistent with SJVAPCD’s Rule 9510 (Indirect Source Review) and Regulation VII’s fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 miles per hour. Furthermore, pursuant to Regulation VIII, Rule 9510, the project would be required to develop, prepare, submit, obtain approval of, and implement a dust control plan, which would reduce fugitive dust impacts to less than significant for project construction.

Construction Equipment and Worker Vehicle Exhaust. Exhaust emission factors for typical diesel-powered heavy equipment are based on the CalEEMod program defaults. Variables factored into

estimating the total construction emissions include: level of activity, length of construction period, number of pieces/types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported onsite or offsite. Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the project site, emissions produced on site as the equipment is used, and emissions from trucks transporting materials and workers to and from the site. Emitted pollutants would include ROG, NO_x, PM₁₀, and PM_{2.5}. As detailed in *Table 3*, project construction emissions would not exceed the SJVAPCD thresholds and construction emissions would not result in a potentially significant impact. Therefore, construction air quality impacts would be less than significant.

ROG Emissions. In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O₃ precursors. In accordance with the methodology prescribed by the SJVAPCD, the ROG emissions associated with paving have been quantified with CalEEMod. The highest concentration of ROG emissions would be generated from architectural coating. This phase includes the interior and exterior painting as well as striping of all paved parking areas and driveways. Paints would be required to comply with SJVAPCD’s Rule 4601 (Architectural Coatings) and limit the amount of ROG emissions from cutback asphalt in compliance with the requirements of SJVAPCD’s Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

Summary. As shown in *Table 3*, all criteria pollutant emissions would remain below their respective thresholds. As such, the proposed project’s construction would not worsen ambient air quality, create additional violations of federal and state standards, or delay the Basin’s goal for meeting attainment standards. Impacts would be less than significant.

Operational Emissions

Operational emissions for mixed-use commercial developments are typically generated from mobile sources (burning of fossil fuels in cars); energy sources (cooling and heating); area sources (landscape equipment and household products), generators, and gas dispensing facilities. *Table 4: Project Operational Emissions* shows that the project's maximum emissions would not exceed SJVAPCD operational thresholds.

Table 4: Project Operational Emissions

Emissions Source	Pollutant (maximum tons per year) ¹					
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO _x)	Carbon Monoxide (CO)	Sulfur Oxides (SO _x)	Coarse Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Area	1.03	0.01	0.84	0.00	0.00	0.00
Energy	0.02	0.34	0.29	0.00	0.02	0.03
Mobile	4.10	3.67	27.03	0.06	5.51	1.44
Generators	0.04	0.13	0.11	0.00	.007	.01

Emissions Source	Pollutant (maximum tons per year) ¹					
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO _x)	Carbon Monoxide (CO)	Sulfur Oxides (SO _x)	Coarse Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Gas Dispensing Facility	3.46	0.00	0.00	0.00	0.00	0.00
Total Project Emissions	8.65	4.15	28.27	0.06	5.54	1.48
<i>SJVAPCD Significance Threshold²</i>	<i>10</i>	<i>10</i>	<i>100</i>	<i>27</i>	<i>15</i>	<i>15</i>
SJVAPCD Threshold Exceeded?	No	No	No	No	No	No
1. Emissions were calculated using CalEEMod version 2022.1.1. 2. SJVAPCD, 2015.						
Source: Refer to the CalEEMod outputs provided in Appendix A, Air Quality Modeling Data.						

Area Source Emissions. Area source emissions would be generated due to the use consumer products, architectural coating, and landscaping.

Energy Source Emissions. Energy source emissions would be generated as a result of electricity and natural gas usage associated with the project. The primary use of electricity and natural gas by the project would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics.

Mobile Source Emissions. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_x, PM₁₀, and PM_{2.5} are all pollutants of regional concern (NO_x and ROG react with sunlight to form O₃ [photochemical smog], and wind currents readily transport PM₁₀ and PM_{2.5}). However, CO tends to be a localized pollutant, dispersing rapidly at the source. Project-generated vehicle emissions have been estimated using CalEEMod. Trip generation rates associated with the project were based on Appendix B: Traffic Impact Study prepared by TJKM (2023). Based on the Transportation Analysis, the project would result in a gross total of 14,980 daily vehicle trips. However, the project would include internal trip capture and pass-by trip reductions. Developments that contain a multitude of uses operating in harmony (such as mixed-use developments that have both generators (e.g., residential uses, hotels) and attractors (e.g., retail stores, offices)) experience higher rates of internal capture. As such, with applicable trip reductions the project would result in 6,477 net new daily trips.

Emergency Backup Generators. Another potential source of operational emissions is stationary equipment such as diesel engines used to power emergency back-up generators. Stationary sources would be subject to SJVAPCD rules and regulations and could require permits from SJVAPCD. The SJVAPCD's permitting process requires the purchase of emission reduction credits (ERC) for any criteria pollutant exceeding the SJVAPCD's New Source Review (NSR) offset requirements. NSR offset requirements provide the basis for the SJVAPCD CEQA thresholds of

significance. As such, sources of stationary air pollutant emissions will be required to comply with all applicable SJVAPCD regulations.

Gasoline Dispensing Facility. The proposed project includes one 12-position gasoline dispensing facility (GDF) and GDFs are regulated by the SJVAPCD. Because GDFs require permits from the SJVAPCD, emissions attributed to the GDF were estimated separately from the area source operational emissions above. The emissions calculations are based on annual daily throughput of 22,464 gallons of gasoline (approximately 8.2 million gallons per year) and 576 gallons of diesel (approximately 0.21 million gallons per year). In addition to traffic-related emissions, the GDF is also a source of ROG emissions associated with loading, storage, refueling of vehicles and spillage that results in evaporative emissions. *Table 4* also presents the evaporative ROG emissions associated with the proposed GDF.

Total Operational Emissions. As seen in *Operational Emissions*

Operational emissions for mixed-use commercial developments are typically generated from mobile sources (burning of fossil fuels in cars); energy sources (cooling and heating); area sources (landscape equipment and household products), generators, and gas dispensing facilities. *Table 4: Project Operational Emissions* shows that the project's maximum emissions would not exceed SJVAPCD operational thresholds.

Net project operational emissions would not exceed SJVAPCD thresholds. As noted above, the SJVAPCD has set its CEQA significance threshold based on the trigger levels for the federal NSR Program. The NSR Program was created to ensure projects are consistent with attainment of health-based federal ambient air quality standards. The federal ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect the public health. Therefore, the project would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and no criteria pollutant health impacts would occur. Project operational emissions would be less than significant.

Cumulative Short-Term Emissions

The SJVAB is designated nonattainment for O₃, PM₁₀, and PM_{2.5} for State standards and nonattainment for O₃ and PM_{2.5} for federal standards. As discussed above, the project's construction-related emissions would not have the potential to exceed the SJVAPCD significance thresholds for criteria pollutants.

Since these thresholds indicate whether an individual project's emissions have the potential to affect cumulative regional air quality, it can be expected that the project-related construction emissions would not be cumulatively considerable. The SJVAPCD recommends consistency Regulation VIII for all projects whether or not construction-related emissions exceed the thresholds of significance. Compliance with SJVAPCD construction-related mitigation requirements is considered to reduce cumulative impacts at a Basin-wide level. As a result, construction emissions

associated with the project would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Cumulative Long-Term Impacts

The SJVAPCD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. The SJVAPCD developed the operational thresholds of significance based on the level above which a project's individual emissions would result in a cumulatively considerable contribution to the Basin's existing air quality conditions. Therefore, a project that exceeds the SJVAPCD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.³

As shown in *Operational Emissions*

Operational emissions for mixed-use commercial developments are typically generated from mobile sources (burning of fossil fuels in cars); energy sources (cooling and heating); area sources (landscape equipment and household products), generators, and gas dispensing facilities. *Table 4: Project Operational Emissions* shows that the project's maximum emissions would not exceed SJVAPCD operational thresholds.

The project's operational emissions would not exceed SJVAPCD thresholds. As a result, operational emissions associated with the project would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Sensitive land uses are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. The nearest sensitive receptors to the project site include single-family residences approximately 100 feet to the east along Atherton Drive.

Carcinogenic Risk

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust which is a known Toxic Air Contaminants (TAC). Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors. However, the use of diesel-powered construction equipment would be episodic and would occur in various phases throughout the project site. Construction is subject to and would comply with California regulations (e.g., California

³ In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD CEQA Guidelines page 2-1).

Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Sections 2485 and 2449), which reduce DPM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions.

The duration of construction activities for the project is estimated to take approximately 30 months. Construction-related activities would result in project-generated emissions of DPM from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); paving; application of architectural coatings; on-road truck travel; and other miscellaneous activities. For construction activity, DPM is the primary toxic air contaminant of concern. On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations. Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors. The nearest sensitive receptors include single-family residences located approximately 100 feet to the west of the project site.

PM₁₀ construction emissions rates in grams per second were calculated from the total annual mitigated on-site exhaust emissions reported in CalEEMod (a maximum of 0.51 tons per year)⁴ during construction. Annual emissions were converted to grams per second and these emissions rates were input into the U.S. EPA AERMOD dispersion model. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a factor in this case). AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Surface and upper air meteorological data was provided by the SJVAPCD. On-site construction emissions were represented in the model via an area source covering the entire project site. The locations of the AERMOD modeled sources and receptors are graphically shown in Appendix A.

As noted above, maximum (worst case) PM₁₀ exhaust construction emissions over the entire construction period were used in AERMOD to approximate construction DPM emissions. Risk levels are available in Appendix C: Health Risk Assessment (HRA) Modeling Data, were calculated based on the California Office of Environmental Health Hazard Assessment (OEHHA) guidance document, Air Toxics Hot Spots Program Risk Assessment Guidelines (February 2015).

Operational vehicle DPM emissions were estimated using emission factors for coarse particulate matter less than 10 microns in diameter (PM₁₀) generated with the EMFAC developed by CARB. EMFAC is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources. EMFAC, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles

⁴ The modeled on- and off-site emissions include implementation of SJVAPCD Regulation VIII, Fugitive Dust.

traveled (VMT) by speed, and number of starts per day. The model includes the emissions benefits of the truck and bus rule and the previously adopted rules for other on-road diesel equipment. The nearest sensitive receptors are the residences located approximately 100 feet to the east of the project site.

Table 5: Carcinogenic Risk Assessment shows the health risk for the following scenarios: construction, operation, and combined construction and operation of the project. Based on OEHHA *Risk Assessment Guidelines*, the exposure duration for a resident is 30 years, beginning with the third trimester. Operations would commence following construction. As such, construction would not overlap with operations. The analysis calculates risk based on exposure to construction concentrations during the entire 30 months of the exposure duration and operational concentrations for the remainder of the exposure duration. As shown in *Table 5*, the construction risk at residential and worker receptors would be 9.55 and 0.16 in one million, respectively. Additionally, the operational cancer risk at residential and worker receptors would be 3.49 and 0.11 in one million, respectively.

Further, the combined construction and operational cancer risk at residential and worker receptors would be 10.40 and 0.37 in one million, respectively. Therefore, the maximum operational cancer risk and combined construction and operational cancer risk would not exceed the SJVAPCD threshold of 20 in one million and impacts associated with carcinogenic risk would be less than significant.

Table 5: Carcinogenic Risk Assessment

Exposure Scenario	Cancer Risk (Risk per Million) ^{1,2}	Significance Threshold (Risk per Million)	Exceeds Significance Threshold?
Construction			
Residential	9.55	20	No
Worker	0.16	20	No
Operations			
Residential	3.49	20	No
Worker	0.11	20	No
Combined Construction + Operations			
Residential	10.40	20	No
Worker	0.37	20	No
¹ Refer to Appendix A. According to OEHHA, the REL for DPM is 5 and the target organ is the respiratory system.			
² The reported pollutant concentration is at the closest receptor (maximally exposed individual receptor).			
Source: Refer to Appendix A: Air Quality Modeling Data for AERMOD inputs, outputs, and risk calculations.			

Non-Carcinogenic Hazard

The significance thresholds for TAC exposure also require an evaluation of non-cancer risk stated in terms of a hazard index. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. RELs are designed to protect sensitive

individuals within the population. According to OEHHA, the REL for DPM is 5 and the target organ is the respiratory system.⁵

Chronic non-carcinogenic impacts are shown in *Table 6: Chronic Hazard Assessment*. A chronic hazard index of 1.0 is considered individually significant. The hazard index is calculated by dividing the chronic exposure by the reference exposure level. The chronic hazard was calculated based on the highest annual average concentration at the maximally exposed individual receptor. It should be noted that there is no acute REL for DPM and acute health risk cannot be calculated. The highest maximum chronic hazard index associated with DPM emissions from project construction would be 0.005 at the residential receptors and 0.001 at the worker receptors. Additionally, the highest maximum chronic hazard index associated with DPM emissions from project operations would be 0.0002 at the residential receptors and 0.0001 at the worker receptors. Therefore, construction and operational non-carcinogenic hazards would not exceed the acceptable limits of 1.0 and impacts associated with non-carcinogenic risk would be less than significant.

Table 6: Chronic Hazard Assessment

Exposure Scenario	Annual Concentration ($\mu\text{g}/\text{m}^3$) ^{1,2}	Chronic Noncancer Hazard
Construction		
Residential	0.0273	0.0055
Worker	0.0069	0.0014
Operations		
Residential	0.0011	0.0002
Worker	0.0004	0.0001
<i>SJVAPCD Threshold</i>	<i>N/A</i>	<i>1</i>
Threshold Exceeded?	N/A	No
¹ Refer to Appendix A. According to OEHHA, the REL for DPM is 5 and the target organ is the respiratory system. ² The reported pollutant concentration is at the closest receptor (maximally exposed individual receptor). Source: Refer to Appendix A: Air Quality Modeling Data for AERMOD inputs, outputs, and risk calculations.		

Carbon Monoxide Hotspots

The primary mobile-source criteria pollutant of local concern is carbon monoxide. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Transport of this criteria pollutant is extremely limited; CO disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Areas of high CO concentrations, or “hot spots,” are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. CO concentration modeling is therefore typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

Although the SJVAPCD has not established a specific numerical screening threshold for CO impacts, the Bay Area Air Quality Management District (BAAQMD) has established that CO impacts may be

⁵ California Office of Environmental Health Hazard Assessment, *OEHHA Acute, 8-hour and Chronic Reference Exposure Level (REL) Summary*, available at <https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary>.

determined to be less than significant if a project would not increase traffic volumes at local intersections to more than 44,000 vehicles per hour, or 24,000 vehicles per hour for locations in heavily urban areas, where “urban canyons” formed by buildings tend to reduce air circulation. Traffic would increase along surrounding roadways during long-term operational activities.

According to the project TIS (2023), the project would generate approximately 6,477 net new daily trips. The project’s effects to existing vehicle distribution and travel speeds would be nominal. Therefore, the project would not involve intersections with more than 24,000 or 44,000 vehicles per hour. As a result, the project would not have the potential to create a CO hotspot and impacts would be less than significant.

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

Less Than Significant Impact.

Construction

Construction activities associated with the project may generate detectable odors from heavy duty equipment (i.e., diesel exhaust), as well as from architectural coatings and asphalt off-gassing. Odors generated from the referenced sources are common in the man-made environment and are not known to be substantially offensive to adjacent receptors. Any construction-related odors would be short-term in nature and cease upon project completion. As a result, impacts to existing adjacent land uses from construction-related odors would be short-term in duration and therefore would be less than significant.

Operational

According to the SJVAPCD, land uses associated with odor complaints typically include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. The project does not include any uses identified by the SJVAPCD as being associated with odors.

The proposed project is not anticipated to generate odors. Moreover, the project is not located in the vicinity of any existing or planned land uses that would be considered major sources of odors. Nonetheless, the project would be subject to the SJVAPCD’s Rule 4102, which allows members of the public to submit complaints regarding odor. Impacts would be less than significant.

Cumulative Impacts

The SJVAPCD does not include separate significance thresholds for cumulative operational emissions. As discussed in Threshold AQ-b above, the project would not exceed the any SJVAPCD criteria pollutant thresholds during construction or operations. Therefore, the project would not conflict with or delay the implementation of SJVAPCD attainment plans and would result in a less than significant impact. The SJVACPD notes that the nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size by itself to result in nonattainment of ambient air quality standards. Instead, a project’s

individual emissions contribute to existing cumulatively significant adverse air quality impacts. Consistency with the SJVAPCD control measures would ensure that the project would not cumulatively contribute to air quality impacts in the Basin. Therefore, the project's cumulative contribution of air quality emissions would be less than significant, and the project's cumulative air quality impacts would also be less than cumulatively considerable.

5.4 BIOLOGICAL RESOURCES

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

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

Less Than Significant With Mitigation Incorporated. Special-status species includes plant and/or wildlife species that are legally protected under the federal Endangered Species Act, the

California Endangered Species Act, or other regulations, or are considered rare enough by the scientific community and trustee agencies to warrant special consideration.

The project is in an urban area with substantial existing development. This includes SR 120 to the north, residential uses south, and additional commercial uses in the local vicinity. In addition, most of the site is disturbed with no native vegetation. Therefore, the site is not expected to support substantial plant and wildlife beyond what currently exists. Due to lack of suitable habitat, no special-status plant species are expected to occur. While the project area may have provided habitat for special-status wildlife species at some time in the past, historical farming and urban development have substantially modified natural habitats in the greater project vicinity. Nonetheless the project site contains potentially suitable habitat for both Swainson's Hawk and burrowing owl; therefore, the project could have potentially significant impacts on these species.

The project site has been determined by the SJCOG to fall within a Category A – No Pay Zone, which exempts the project from paying SJMSCP fees. The project site falls under this category because it is classified as Urban Habitat by the SJCOG and the conversion of open space has already occurred. Although the project would not be required to pay SJMSCP fees, the project would need to participate in the SJMSCP, as required by City policy and specified in the mitigation measure below. The SJMSCP contains Incidental Take Minimization Measures (ITMMs) for both Swainson's Hawk and burrowing owl. Implementation of Mitigation Measure BIO-1 would reduce project impacts on special-status species to a level that would be less than significant.

Mitigation Measure

MM BIO-1: The developer shall mitigate for the proportionate loss of potential wildlife habitat from the project site by applying for coverage and implementing Incidental Take Minimization Measures (ITMMs) as required by the adopted San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP).

- 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?*

Less than Significant Impact. As there are no streams on or near the project site, there is no riparian habitat. Additionally, the US Fish and Wildlife Service did not identify any other sensitive natural communities on the National Wetlands Mapper Inventory. The project would have a less than significant impact on these habitats.

- c) *Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological?*

Less Than Significant Impact. As identified from the US Fish and Wildlife National Wetlands Mapper, there are no identified state or federally protected wetlands mapped within the project site. Therefore, there is a less than significant 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 With Mitigation Incorporated. As noted, there are no streams on or near the project site. The project site is not a known wildlife migration corridor and is unlikely to be one, given its location amid urban development. However, the project site contains trees around the perimeter of the site that could be used by raptors and other migratory birds during their nesting seasons. If these trees are removed during nesting seasons for these birds, this could have a direct, adverse impact. However, with the implementation of MM BIO-2, impacts would be reduced to a level that would be less than significant.

Mitigation Measure

MM BIO-2: In the event trees need to be removed or trimmed to facilitate the project, they should be felled or trimmed outside of the general bird nesting season (February 1 through August 31). If not, the developer shall have a nesting bird survey conducted immediately prior to tree trimming or removal. If active nests are found, tree felling, or trimming shall be delayed until the young have fledged.

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

Less than Significant Impact. Potentially applicable local requirements are the City's Street Tree Ordinance and the Street Tree Plan. There are trees within the public right-of-way, located along the perimeter of the project site. The treatment of these trees would comply with the City of Manteca's Tree and Shrub Ordinance, located in Chapter 12.08 of the Municipal Code. Any existing trees removed within the public right of way, would be replaced on-site within an approved landscape plan, that is consistent with the City's tree replacement and removal schedule, as shown in Chapter 17.48.060.D. Therefore, the project would have a less than significant impact on local biological requirements.

- 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?*

Less Than Significant With Mitigation Incorporated. The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) is a multi-species, multi-habitat, multi-purpose open space management program for all of San Joaquin County. The Manteca City Council adopted the SJMSCP (Resolution #R2001-46) on February 5, 2001, signing a Joint Powers Agreement with other

City, County, State, and Federal agencies. The SJMSCP is a 50-year Plan (2001 – 2051) that provides compensation for the conversion of open space to non-open space uses which affect the plant, fish, and wildlife species covered by the Plan. The Plan also includes some compensation to offset the impacts of open space conversions on non-wildlife related resources such as recreation, agriculture, scenic values, and other beneficial open space. The SJMSCP provides three compensation methods: preservation of existing sensitive lands, creation of new comparable habitat on the project site, or payment of fees that would be used to secure preserve lands outside the project site. In addition to fee payments, the SJMSCP identifies and requires the applicants to abide by Incidental Take Minimization Measures (ITMMs), which are protection measures that avoid direct impacts of development on special-status species (SJCOG 2000). The SJCOG implements the SJMSCP on a project-by-project basis. The City of Manteca is a participant in the SJMSCP. As previously mentioned, the project site is within Category A – No Pay Zone, which exempts the project from SJMSCP fees.

As discussion in Impact a) above, the project would implement MM BIO-1, which would require compliance with the SJMSCP, including implementation of any applicable Incidental Take Minimization Measures. No other habitat conservation plans apply to the project site and the project would not conflict with the SJMSCP with the implementation of MM BIO-1.

Cumulative Impacts

Overall, the project is a previously disturbed with existing development located within an urban environment. To the north of the site is SR 120 and to the south is residential uses. The surrounding area has been historically modified from agricultural uses and then further commercial development. Therefore, the development of the project site would not be cumulatively considerable. In addition, the site is not located within a known habitat corridor and does not contain any riparian habitat, federally protected wetlands, or other sensitive natural communities. Though the project is located within the SJMSCP, it would comply with all policies, fees, and mitigation measures associated. Therefore, overall, with the above-mentioned implementation the project would have a less than significant impact on biological resources.

5.5 CULTURAL RESOURCES

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

- a) *Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?*

Less Than Significant Impact. A cultural resources study for the project site was conducted by Rincon Consultants, Inc. in September 2023 (See Appendix D: Cultural Resources Technical Report). Historical resources findings were supported by CHRIS records search, background research, a review of historical topographic and aerial imagery, a Sacred Land File Search, and a pedestrian survey. From the CHRIS records search within 0.5-miles, none were recorded within or adjacent to the project site. There were three resources located within 0.5 miles of the project site. However, two of the three resources are ineligible for listing in the NRHP and CRHR as they have been deemed insignificant. These resources are a transmission line and a historic-age farmhouse. One of the three resources identified with that radius is Elliott (Brock) School, a historic-period building that was unevaluated. These resources are considered less than significant for this threshold given that they are located outside of the project site. Altogether, between the CHRIS records search and background research, 19 cultural resource studies were found within 0.5 miles of the project site. Of these, six included a portion of the project site. None of the studies identified any cultural resources on site. Previous studies identify that the entire project site has been studied, however, none of the studies covering the project site include a pedestrian survey of the project site. From the review of historical topographic maps, several livestock/farming buildings were located along Airport Way through the 1980’s. The pedestrian survey conducted for this report confirmed no remnants of these buildings on the project site. Additional findings were concrete structures presumably related to irrigation activities. These structures, according to the FHWA Section 106 Programmatic Agreement, are not considered a significant resource due to lack of significant historical age. The structures were not found to have any historical significance, and therefore fall under Property Type 1, Minor, ubiquitous or fragmentary infrastructure elements and would not

be significant. Furthermore, the Sacred Land File Search resulted in negative results. Overall, there were no historical cultural resources identified on the project site and therefore the project would have a less than significant impact.

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?*

Less Than Significant With Mitigation Incorporated. As indicated above there were no archaeological resources found on-site, this is substantiated through a CHRIS records search, background research, review of historical topographic and aerial imagery, a Sacred Land File Search, and a pedestrian survey. However, the absence of substantial surface prehistoric or historic-period archeological remains within the project vicinity and the existing level of disturbance does not preclude the possibility of subsurface resources. Though the circumstances would present a low possibility, the following mitigation measure (MM) would reduce impacts in the unanticipated discovery of archaeological resources during construction. With the implementation of MM CUL-1 and MM CUL-2, impacts would be less than significant.

Mitigation Measures

MM CUL-1 Prior to the issuance of any grading permits for the proposed Project, the project applicant shall demonstrate that a qualified archaeologist has been retained to monitor and observe rough grading and trenching activities. If potentially significant archaeological resources are encountered during subsurface excavation activities, all construction activities within a 100-foot radius of the resource shall cease until a qualified archaeologist determines whether the resource requires further study. The City shall require that the applicant include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. Any previously undiscovered resources found during construction shall be recorded on appropriate Department of Parks and Recreation forms and evaluated for significance in terms of California Environmental Quality Act criteria by a qualified archaeologist. Potentially significant cultural resources consist of but are not limited to stone, bone, fossils, wood, or shell artifacts or features, including hearths, structural remains, or historic dumpsites. If the resource is determined to be significant under CEQA, the City and a qualified archaeologist shall determine whether preservation in place is feasible. Such preservation in place is the preferred mitigation. If such preservation is infeasible, the qualified archaeologist shall prepare and implement a research design and archaeological data recovery plan for the resource. The archaeologist shall also conduct appropriate technical analyses, prepare a comprehensive written report and file it with the appropriate information center (California Historical Resources Information System), and provide for the permanent curation of the recovered materials.

MM CUL-2: Prior to the issuance of any grading permits for the proposed Project, a Cultural Awareness Training Program shall be provided to all construction managers and construction personnel prior to commencing any ground disturbance work at any

of the project sites. The training shall be prepared and conducted by a qualified archaeologist to the satisfaction of the City Planning Department. The training may be discontinued when ground disturbance is completed. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training. A copy of the training materials and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgment forms shall be submitted to the City Planning Department for their review and approval.

c) *Disturb any human remains, including those interred outside of dedicated cemeteries?*

Less Than Significant Impact. No human remains are known to be present within the project site. If human remains are found, those remains would require proper treatment in accordance with applicable laws, including Health and Safety Code (HSC) §§ 7050.5-7055 and PRC § 5097.98 and § 5097.99. HSC §§ 7050.5-7055 describe the general provisions for treatment of human remains. Specifically, HSC § 7050.5 prescribes the requirements for the treatment of any human remains that are accidentally discovered during excavation of a site. HSC § 7050.5 also requires that all activities cease immediately, and a qualified archaeologist and Native American monitor be contacted immediately. As required by state law, the procedures set forth in PRC § 5097.98 would be implemented, including evaluation by the County Coroner and notification of the NAHC. The NAHC would then designate the “Most Likely Descendent” of the unearthed human remains. If human remains are found during excavation, excavation would be halted in the vicinity of the discovery and any area that is reasonably suspected to overlay adjacent remains shall remain undisturbed until the County Coroner has investigated, and appropriate recommendations have been made for the treatment and disposition of the remains. Compliance with the established regulatory framework (i.e., HSC § 7050.5-7055 and PRC §§ 5097.98 and 5097.99) would ensure potential Project impacts concerning human remains are reduced to less than significant.

Cumulative Impacts

Overall, the project would not cause a considerable impact to historical cultural resources, archaeological cultural resources, or human remains. Due to the project location and previously disturbed project site ground, and the addition of the above listed mitigation measures the proposed project would not cause a cumulatively considerable impact to occur.

5.6 ENERGY

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

REGULATORY SETTING

State

Renewable Energy Standards

In 2002, California established its Renewable Portfolio Standard program 12F⁶ with the goal of increasing the annual percentage of renewable energy in the state’s electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission subsequently accelerated that goal to 2010 for retail sellers of electricity (Public Utilities Code Section 399.15(b)(1)). Then-Governor Schwarzenegger signed Executive Order S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020. In September 2009, then-Governor Schwarzenegger continued California’s commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the California Air Resources Board under its AB 32 authority to enact regulations to help the State meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. In September 2010, the California Air Resources Board adopted its Renewable Electricity Standard regulations, which require all of the State’s load-serving entities to meet this target. In October 2015, then-Governor Brown signed into legislation Senate Bill 350, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Signed in 2018, SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

⁶ The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country.

California 2007 Energy Action Plan Update

The 2007 Energy Action Plan II is the State's principal energy planning and policy document. The plan describes a coordinated implementation strategy to ensure that California's energy resources are adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the state and its electricity providers would invest first in energy efficiency and demand-side resources, followed by renewable resources, and only then in clean conventional electricity supply to meet its energy needs.

Building Codes

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977 and are updated every three years (Title 24, Part 6, of the California Code of Regulations). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On May 9, 2018, the California Energy Commission (CEC) adopted the 2019 Building Energy Efficiency Standards, which went into effect on January 1, 2020. The 2022 Standards were adopted in August 2021 and went into effect in January 2023.

The 2022 Standards improve upon the previous 2019 Standards. Among other updates like strengthened ventilation standards for gas cooking appliances, the 2022 Energy Code includes updated standards in three major areas:

- New electric heat pump requirements for residential uses, schools, offices, banks, libraries, retail, and grocery stores.
- The promotion of electric-ready requirements for new homes including the addition of circuitry for electric appliances, battery storage panels, and dedicated infrastructure to allow for the conversion from natural gas to electricity.
- The expansion of solar photovoltaic and battery storage standards to additional land uses including high-rise multifamily residences, hotels and motels, tenant spaces, offices, (including medical offices and clinics), retail and grocery stores, restaurants, schools, and civic uses (including theaters auditoriums, and convention centers)

Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.

California Green Building Standards Code

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

CALGreen also provides voluntary measures (CALGreen Tier 1 and Tier 2) that local governments may adopt which encourage or require additional measures in the five green building topics. The CEC approved the 2022 California Green Building Standards Code and went into effect January 1, 2023.

2006 Appliance Efficiency Regulations

The California Energy Commission adopted Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) on October 11, 2006. The regulations were approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both Federally regulated appliances and non-Federally regulated appliances. While these regulations are now often viewed as “business-as-usual,” they exceed the standards imposed by all other states and they reduce GHG emissions by reducing energy demand.

California Utility Efficiency Programs (Senate Bill 1037 and Assembly Bill 2021)

SB 1037 and AB 2021 require electric utilities to meet their resource needs first with energy efficiency. California Utility Efficiency Programs have also set new targets for statewide annual energy demand reductions.

Regional and Local

City of Manteca General Plan

The City of Manteca General Plan includes policies applicable to all development projects in Manteca. The following policies are specific to energy use and energy efficiency and applicable to the project.

Policy AQ-P-10 Encourage energy efficient building designs

Policy AQ-1-15 Design review criteria shall include the following considerations, at a minimum:

- The developer of a sensitive air pollution receptor shall submit documentation that the project design includes appropriate buffering (e.g., setbacks, landscaping) to separate the use from highways, arterial streets, hazardous material locations and other sources of air pollution or odor.
- Promote the use of new and replacement fuel storage tanks at refueling stations that are clean fuel compatible, if technically and economically feasible.
- The use of energy efficient lighting (including controls) and process systems beyond Title 24 requirements shall be encouraged where practicable (e.g., water heating, furnaces, boiler units, etc.)
- The use of energy efficient automated controls for air conditioning beyond Title 24 requirements shall be encouraged where practicable.
- Promote solar access through building siting to maximize natural heating and cooling, and landscaping to aid passive cooling and to protect from winds.

ENVIRONMENTAL IMPACTS

- 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.

Construction

The energy consumption associated with construction of the proposed project includes primarily diesel fuel consumption from on-road hauling trips and off-road construction diesel equipment, and gasoline consumption from on-road worker commute and vendor trips. Temporary electric power for as-necessary lighting and electronic equipment (such as computers inside temporary construction trailers, and heating, ventilation, and air conditioning) would be powered by a generator. The amount of electricity used during construction would be minimal; typical demand would stem from the use of electrically powered hand tools and several construction trailers by managerial staff during the hours of construction activities. The majority of the energy used during construction would be from petroleum. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. In addition, some incidental energy conservation would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest EPA and CARB engine emissions standards. These engines use highly efficient combustion engines to minimize unnecessary fuel consumption. Additionally, use of construction fuel would cease once the project is fully developed. As such, project construction would have a nominal effect on the local and regional energy supplies. Therefore, it is expected that construction fuel consumption associated with the project would not be inefficient, wasteful, or unnecessary. The project would not substantially affect existing energy or fuel supplies, or resources and new capacity would not be required. Impacts would be less than significant in this regard.

Operations

The energy consumption associated with the project would include building electricity, water, and natural gas usage, as well as fuel usage from on-road vehicles. Quantification of operational energy consumption are provided for the project in *Table 7: Annual Energy Consumption During Operations* (See Appendix E: Energy Calculations Modeling Data). Operation of uses implemented pursuant to the proposed project would annually consume approximately 2,662 MWh of electricity, 70,156 therms of natural gas, 224,170 gallons of diesel, and 566,534 gallons of gasoline.

Table 7: Annual Energy Consumption During Operations

Source	Project Operational Usage	San Joaquin County Annual Energy Consumption	Percentage Increase Countywide
Electricity Use	Megawatt Hour/Year (MWh/year)		
Area ¹	2,431	5,608,060	0.043%
Water ¹	231		0.004%
Total Electricity	2,662		0.047%
Natural Gas Use	Therms/year		
Area ¹	70,156	186,323,018	0.038%
Diesel Use	Gallons/Year		
Mobile ²	224,170	97,654,594	0.048%
Gasoline Use	Gallons/Year		
Mobile ²	566,534	272,605,570	0.208%
Notes: 1. The electricity and natural gas usage are based on project-specific estimates and CalEEMod version 2022.1.1 defaults. 2. Calculated based on the mobile source fuel use based on vehicle miles traveled (VMT) and fleet-average fuel consumption (in gallons per mile) from EMFAC2021 for operational year 2026. Abbreviations: CalEEMod: California Emission Estimation Model; EMFAC2021: California Air Resources Board Emission Factor Model; MWh: Megawatt-hour Source: Energy Calculations in Appendix E			

Pacific Gas and Electric (PG&E) provides electricity to the project area. The project site is expected to be served by the existing PG&E electrical facilities. Total electricity demand in PG&E’s service area is forecast to increase by approximately 12,000 GWh—or 12 billion kWh—between 2016 and 2028. The project’s anticipated electricity demand (approximately 2,662 MWh) would be nominal compared to overall demand in PG&E’s service area. Therefore, the projected electrical demand would not significantly impact PG&E’s level of service.

Regarding natural gas, San Joaquin County consumed 186,323,018 therms of natural gas in 2021. Therefore, the project’s operational energy consumption of natural gas (70,156 therms/year) would represent 0.038 percent of the natural gas consumption in the County.

In 2026, Californians are anticipated to use approximately 14,185,807,235 gallons of gasoline and approximately 3,692,167,217 gallons of diesel fuel. San Joaquin County annual gasoline fuel use in 2026 is anticipated to be 272,605,570 gallons and diesel fuel is anticipated to be 97,654,594 gallons. Expected project operational use of gasoline and diesel would represent 0.004 percent of current gasoline use and 0.006 percent of current diesel use in the State. Project operational use of gasoline and diesel would represent 0.208 percent of gasoline use and 0.048 percent of diesel use in the County.

The project would be consistent with the 2022 Building Efficiency Standards, which will take effect on January 1, 2023, and/or future Building Energy Efficiency Standards depending on when construction permits are issued. Prior to issuance of a building permit, the City of Manteca would review and verify that the project plans demonstrate compliance with the current version of the

Building and Energy Efficiency Standards. Title 24 standards require energy conservation features in new construction (e.g., high- efficiency lighting, high-efficiency heating, ventilating, and air-conditioning (HVAC) systems, thermal insulation, double-glazed windows, water conserving plumbing fixtures).

Additionally, the project would also be required to adhere to the provisions of CALGreen, which establishes planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The insulation and design code requirements would minimize wasteful energy consumption.

None of the project energy uses exceed one percent of San Joaquin County use. Therefore, it is expected that operational fuel and energy consumption associated with the project would not be inefficient, wasteful, or unnecessary. Impacts would be less than significant in this regard.

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

Less than significant impact. The project would be required to comply with existing regulations, including applicable measures from the City’s General Plan, or would be directly affected by the outcomes (vehicle trips and energy consumption would be less carbon intensive due to statewide compliance with future low carbon fuel standard amendments and increasingly stringent Renewable Portfolio Standards). As such, the project would not conflict with any other state-level regulations pertaining to energy. The project would comply with existing State energy standards and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Impacts would be less than significant in this regard.

Cumulative Impacts

As discussed above, it is expected that construction fuel consumption associated with the project would not be inefficient, wasteful, or unnecessary. The project would not substantially affect existing energy or fuel supplies, or resources. Additionally, the project would also be required adhere to the provisions of CALGreen, which establishes planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The insulation and design code requirements would minimize wasteful energy consumption. As discussed above, none of the project energy uses exceed one percent of San Joaquin County use and it is expected that operational fuel and energy consumption associated with the project would not be inefficient, wasteful, or unnecessary. Therefore, the project’s cumulative contribution of energy use would be less than significant, and the project’s cumulative energy impacts would also be less than cumulatively considerable.

5.7 GEOLOGY AND SOILS

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
7. GEOLOGY AND SOILS. Would the project:				
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.			X	
ii) Strong seismic ground shaking?		X		
iii) Seismic-related ground failure, including liquefaction?		X		
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		X		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?		X		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

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.*

Less Than Significant Impact. The closest known fault zone is to the project site is the Greenville Fault Zone located approximately 30 miles southwest (California Geological Survey, 2018). The nearest fault is the Vernalis Fault located approximately 7 miles southwest (California Geologic Survey, 2015). There are no earthquake fault zone boundaries or County designated fault zones identified at the project site or within the city of Manteca. The Seismic Hazards Mapping Act, passed in 1990, requires mapping of seismic hazard zones and sets requirements for projects located within such zones. The project site is not within a seismic hazard zone map prepared under the Seismic Hazards Mapping Act (California Geological Survey, 2018). Based on this information, the project would have no impact related to fault rupture hazards. This is consistent with the conclusions of the North Crossroads IS/MND, which did not identify significant impacts on this issue. Overall, impacts associated with the rupture of a known earthquake fault would be less than significant.

ii) *Strong seismic ground shaking?*

Less Than Significant With Mitigation Incorporated. The project site, located in the Central Valley has a low shaking potential (California Geologic Survey, 2016). Design and construction would still comply with the latest 2022 California Building Code (CBC), City regulations, and other applicable state standards which would minimize the potential of strong seismic ground shaking impacts. The CBC provides procedures for earthquake-resistant structural design based on the buildings risk or seismic design category that include considerations for on-site soil conditions, occupancy, and the configuration of the structure including the structural system and height. Compliance with the CBC and the below outlined mitigation measure would ensure seismic group shaking impacts would be at a less than significant level. Mitigation Measure MM GEO-1 would require the project applicant to submit design level geotechnical study to the City of Manteca for review. Therefore, with the project conforming to the latest CBC Building Codes and MM GEO-1, impacts due to strong seismic ground shaking would be less than significant with the incorporation of MM GEO-1.

Mitigation Measure

MM GEO-1: Prior to issuance of building permits, the project applicant shall submit a design-level geotechnical study and building plans to the City of Manteca for review and approval. The building plans shall demonstrate that they incorporate all applicable recommendations of the design-level geotechnical study and comply with all applicable requirements of the most recent version of the California Building Standards Code. A licensed professional engineer shall prepare the plans, including those that pertain to soil engineering, structural foundations, pipeline excavation, and installation. The approved plans shall be incorporated into the proposed project. All onsite soil engineering activities shall be conducted under the supervision of a licensed Geotechnical Engineer or Certified Engineering Geologist.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant with Mitigation Incorporated. Seismically induced liquefaction occurs when loose, water-saturated sediments of relatively low density are subjected to cyclic shaking that causes soils to lose strength or stiffness because of increased pore water pressure. The project does not fall within any liquefaction zones identified in the Seismic Hazards Map by the California Geological Survey (2018). Additionally, the project does not fall within or near an Alquist-Priolo Fault Hazard Zone, Landslide Zone, or Liquefaction Zone as designated on the Department of Conservations (DOC) map viewer by the California Geological Survey (2018). As the project site is not designated within one of the above zones and all structures included in the project would be required by State law to be constructed in accordance with all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics, and adherence to MM GEO-1. The potential for substantial adverse effects to the project due to seismic-related ground failure, including liquefaction would therefore be less than significant with mitigation.

iv) Landslides?

Less Than Significant Impact. The project site is located in a generally flat area and does not contain any steep slopes that could result in landslides on or in the vicinity of the project site. Also identified in the Seismic hazards Map by the California Geological Survey, there are no landslide zone boundaries that fall within the project site (California Geological Survey, 2018). The project would also conform with all applicable General Plan policies and additional federal, state, and local regulations. Therefore, impacts associated with landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant With Mitigation Incorporated. According to the project site plans prepared for the proposed project, development of the proposed project would result in the creation of new impervious surface areas throughout the project site. The development of the project site would also cause ground disturbance of topsoil. The ground disturbance would be limited to the areas proposed for grading and excavation, including the proposed internal roadways and drain infrastructure improvements. After grading and excavation, and prior to overlaying the disturbed

ground surfaces with impervious surfaces and structures, the potential exists for wind and water erosion to occur, which could adversely affect downstream storm drainage facilities.

Without implementation of appropriate Best Management Practices (BMPs) related to prevention of soil erosion during construction, development of the project would result in a potentially significant impact with respect to soil erosion. Mitigation Measure HYD-1 requires the project applicant to prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) identifying specific actions and BMPs to prevent stormwater pollution during construction activities. The SWPPP shall include, among other things, temporary erosion control measures to be employed for disturbed areas. Implementation of the following mitigation measure, therefore, would ensure the impact is less than significant.

- 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?*

Less Than Significant With Mitigation Incorporated. The project site and surrounding areas are generally flat, which is not anticipated to result in significant landslides. As previously mentioned, there are no active faults, Seismic Hazard Program Liquefaction Zones, or Alquist-Priolo Fault Hazard Zones on the project site. Therefore, the potential for lateral spreading, subsidence, liquefaction, or collapse is unlikely. Subsidence is one factor that can cause unstable soil. To further prevent the above adverse effects all project components would be constructed in accordance with applicable City goals and policies, as well as Codes established by the CBC. All construction plans and related geotechnical plans and studies would be reviewed by the Town further ensuring compliance with all building construction standards. Compliance with all construction standards would reduce the potential for an off-site landslide, lateral spreading, subsidence, liquefaction or collapse and reduce the impacts to a less than significant level. In addition, the project applicant would be required to submit a geotechnical investigation report to the City as part of MM GEO-1. As a result, with implementation of MM GEO-1 and the SWPPP, impacts associated would be less than significant with mitigation.

- d) *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?*

Less Than Significant With Mitigation Incorporated. Expansive soils are those that undergo volume changes as moisture content fluctuates; swelling substantially when wet or shrinking when dry. Soil expansion can damage structures by cracking foundations, causing settlement and distorting structural elements. Expansion is a typical characteristic of clay-type soils. Expansive soils shrink and swell in volume during changes in moisture content, such as a result of seasonal rain events, and can cause damage to foundations, concrete slabs, roadway improvements, and pavement sections. Soil expansion is dependent on many factors. The more clayey, critically expansive surface soil and fill materials would be subjected to volume changes during seasonal fluctuations in moisture content. There are no expansive (i.e., shrink-swell) soils within the project site. According to the California Soil Resource Lab (2022), the project site contains 85% veritas fine

sandy loam, 4% grangeville coarse-loamy, 2% bisgani sandy, 1% maderia fine, 1% tinnin sandy, 1% jahant fine-loamy, and 6% unnamed in the southwest portion of the site. Additionally, the project site contains 85% tinnin sandy, 4% delhi mixed, 3% veritas coarse-loamy, 3% honcut coarse-loamy, 3% manteca coarse-loamy, 1% timor sandy, and 1% unnamed in the northwest portion (California Soil Resource Lab, 2022). Given the soils identified on site, adherence to applicable Federal, State, and Local rules and regulations, and compliance with MM GEO-1 impacts would be less than significant with mitigation.

- e) *Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

Less Than Significant Impact. The project site would tie into existing 8-inch lateral sewer line within the public right of way. Therefore, the project would not involve a septic system and there would be a less than significant impact from incompatible soils.

- f) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Less Than Significant With Mitigation Incorporated. There are no known paleontological resources located in project area. However, development of the proposed project could result in the discovery and disturbance of previously unknown or undiscovered paleontological resources. While fossils are not expected to be discovered during construction, it is possible that significant fossils could be discovered during excavation activities, even in areas with a low likelihood of occurrence. Fossils encountered during excavation could be inadvertently damaged. If a unique paleontological resource is discovered, the impact to the resource could be substantial. MM GEO-2 would require that a qualified paleontologist monitor grading and excavation activities, and a paleontologist be notified if paleontological resources are found. If any scientifically important large fossil remains are uncovered, the paleontologist would have the authority to divert heavy equipment away from the fossil site. With implementation of MM GEO-2 and consistency with City ordinances, policies and goals, impacts associated with paleontological resources would be less than significant with mitigation.

Mitigation Measure

MM GEO-2: Paleontological Monitor. Prior to issuance of improvement plans, the City shall ensure that a qualified paleontologist shall be retained to prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). This plan will address specifics of monitoring and mitigation and comply with the recommendations of the Society of Vertebrate Paleontology's 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. All ground disturbances in the project area that occur in previously undisturbed sediment with high paleontological sensitivity will require monitoring. The project paleontologist may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. In the event that any potentially significant paleontological resources

are discovered, the paleontological monitor shall stop work inside a zone designated by him/her where additional paleontological resources could be found. A plan for the evaluation of the resource shall be submitted to the Community Development Director for approval.

Cumulative Impacts

Geology and soil-related impacts are generally site-specific and are determined by a particular site's soil characteristics, topography, and proposed land uses. Cumulative effects related to geology resulting from the implementation of proposed improvements of the site and surrounding areas could expose more persons and property to potential impacts due to seismic activity. Long-term impacts related to geology include the exposure of people to the potential for seismically induced ground shaking. Implementation of other cumulative projects would incrementally increase the number of people and structures subject to a seismic event. Seismic and geologic significance would be considered on a project-by-project basis through the preparation of a design-level geotechnical study and such exposures would be minimized through strict engineering guidelines as they pertain to protection against known geologic hazards and potential geologic and soil related impacts. The proposed project would not contribute to any cumulatively considerable geologic and/or soils impacts. Therefore, cumulative effects of increased seismic risk would be less than significant.

5.8 GREENHOUSE GAS EMISSIONS

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

REGULATORY SETTING

Federal

To date, national standards have not been established for nationwide GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

Energy Independence and Security Act of 2007. The Energy Independence and Security Act of 2007 (December 2007), among other key measures, requires the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

U.S. Environmental Protection Agency Endangerment Finding. The U.S. Environmental Protection Agency’s (EPA) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Federal Clean Air Act (FCAA) and must be regulated if these gases could be reasonably

anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing FCAA and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

Federal Vehicle Standards. In response to the U.S. Supreme Court ruling discussed above, Executive Order 13432 was issued in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, an Executive Memorandum was issued directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO₂ in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking. On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks. It should be noted that the EPA is currently proposing to freeze the vehicle fuel efficiency standards at their planned 2020 level (37 mpg), canceling any future strengthening (currently 54.5 mpg by 2026).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO₂ emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6 to 23 percent over the 2010 baseline.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO₂ emissions by approximately 1.1 billion metric tons and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program.

In 2018, the EPA stated their intent to halt various Federal regulatory activities to reduce GHG emissions, including the phase two program. California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with

other countries to implement global climate change initiatives. On September 27, 2019, the EPA and the NHTSA published the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program.” (84 Fed. Reg. 51,310 (Sept. 27, 2019.)) The Part One Rule revokes California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the EPA and NHTSA finalized rulemaking for SAFE Part Two sets CO₂ emissions standards and corporate average fuel economy (CAFE) standards for passenger vehicles and light duty trucks, covering model years 2021-2026.

State

California Air Resources Board

The California Air Resources Board (CARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. Various statewide and local initiatives to reduce California’s contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects.

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation, such as the landmark AB 32 California Global Warming Solutions Act of 2006, was specifically enacted to address GHG emissions. Other legislation, such as Title 24 building efficiency standards and Title 20 appliance energy standards, were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major legislation related to GHG emissions reduction.

Assembly Bill 32 (California Global Warming Solutions Act of 2006). AB 32 instructs the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

CARB Scoping Plan. Adopted December 15, 2022, CARB’s 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) sets a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 in accordance with AB 1279. To achieve the targets of AB 1279, the 2022 Scoping Plan relies on existing and emerging fossil fuel alternatives and clean technologies, as well as carbon capture and storage. Specifically, the 2022 Scoping Plan focuses on zero-emission transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines); and scaling up new options such as green hydrogen. The 2022 Scoping Plan sets one of the most aggressive approaches to reach carbon neutrality in the world. Unlike the 2017 Scoping Plan, CARB no longer includes a numeric per capita threshold and instead advocates for compliance with a local GHG reduction strategy (i.e., Climate Action Plan) consistent with CEQA Guidelines section 15183.5.

The key elements of the 2022 CARB Scoping Plan focus on transportation. Specifically, the 2022 Scoping Plan aims to rapidly move towards zero-emission transportation (i.e., electrifying cars, buses, trains, and trucks), which constitutes California's single largest source of GHGs. The regulations that impact the transportation sector are adopted and enforced by CARB on vehicle manufacturers and are outside the jurisdiction and control of local governments. The 2022 Scoping Plan accelerates development of new regulations as well as amendments to strengthen regulations and programs already in place.

Included in the 2022 Scoping Plan is a set of Local Actions (2022 Scoping Plan Appendix D) aimed at providing local jurisdictions with tools to reduce GHGs and assist the state in meeting the ambitious targets set forth in the 2022 Scoping Plan. Appendix D to the 2022 Scoping Plan includes a section on evaluating plan-level and project-level alignment with the State's Climate Goals in CEQA GHG analyses. In this section, CARB identifies several recommendations and strategies that should be considered for new development in order to determine consistency with the 2022 Scoping Plan. Notably, this section is focused on Residential and Mixed-Use Projects. CARB specifically states that Appendix D does not address other land uses (e.g., industrial). However, CARB plans to explore new approaches for other land use types in the future.

As such, it would be inappropriate to apply the requirements contained in Appendix D of the 2022 Scoping Plan to any land use types other than residential or mixed-use residential development.

Senate Bill 32 (California Global Warming Solutions Act of 2006: Emissions Limit. Signed into law in September 2016, SB 32 codifies the 2030 GHG reduction target in Executive Order B-30-15 (40 percent below 1990 levels by 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017, CARB adopted a second update to the Scoping Plan (CARB, 2017b). The 2017 Scoping Plan details how the State will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping Plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and support the Clean Power Plan and other Federal actions.

SB 375 (The Sustainable Communities and Climate Protection Act of 2008). Signed into law on September 30, 2008, SB 375 provides a process to coordinate land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established by AB 32. SB 375 requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, aligns planning for transportation and housing, and creates specified incentives for the implementation of the strategies. The applicable sustainable community strategy in the Bay Area is Plan Bay Area 2040.

AB 1493 (Pavley Regulations and Fuel Efficiency Standards). AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's

denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011. The regulations establish one set of emission standards for model years 2009–2016 and a second set of emissions standards for model years 2017 to 2025. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO₂e emissions and 75 percent fewer smog-forming emissions.

SB 1368 (Emission Performance Standards). SB 1368 is the companion bill of AB 32, which directs the California Public Utilities Commission (CPUC) to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 limits carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. The new law effectively prevents California’s utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The CPUC adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, for 1,100 pounds of CO₂ per megawatt-hour.

SB 1078, SB 107, and SBX1-2 (Renewable Electricity Standards). SB 1078 (2002) required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 (2006) changed the due date to 2010 instead of 2017. On November 17, 2008, Executive Order S-14-08 established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Executive Order S-21-09 also directed CARB to adopt a regulation by July 31, 2010, requiring the state’s load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. SB X1-2 codified the 33 percent by 2020 goal.

SB 350 (Clean Energy and Pollution Reduction Act of 2015). Signed into law on October 7, 2015, SB 350 implements the goals of Executive Order B-30-15. The objectives of SB 350 are to increase the procurement of electricity from renewable sources from 33 percent to 50 percent (with interim targets of 40 percent by 2024, and 45 percent by 2027) and to double the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. SB 350 also reorganizes the Independent System Operator to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

AB 398 (Market-Based Compliance Mechanisms). Signed on July 25, 2017, AB 398 extended the duration of the Cap-and-Trade program from 2020 to 2030. AB 398 required CARB to update the Scoping Plan and for all GHG rules and regulations adopted by the State. It also designated CARB as the statewide regulatory body responsible for ensuring that California meets its statewide carbon pollution reduction targets, while retaining local air districts’ responsibility and authority to curb toxic air contaminants and criteria pollutants from local sources that severely impact public health. AB 398 also decreased free carbon allowances over 40 percent by 2030 and prioritized Cap-and-Trade spending to various programs including reducing diesel emissions in impacted communities.

SB 150 (Regional Transportation Plans). Signed on October 10, 2017, SB 150 aligns local and regional GHG reduction targets with State targets (i.e., 40 percent below their 1990 levels by 2030). SB 150 creates a process to include communities in discussions on how to monitor their regions' progress on meeting these goals. The bill also requires the CARB to regularly report on that progress, as well as on the successes and the challenges regions experience associated with achieving their targets. SB 150 provides for accounting of climate change efforts and GHG reductions and identify effective reduction strategies.

SB 100 (California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases). Signed into Law in September 2018, SB 100 increased California's renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

AB 1346 (Air Pollution: Small Off-Road Engines). Signed into Law in October 2021, AB 1346 requires CARB, to adopt cost-effective and technologically feasible regulations to prohibit engine exhaust and evaporative emissions from new small off-road engines, consistent with federal law, by July 1, 2022. The bill requires CARB to identify and, to the extent feasible, make available funding for commercial rebates or similar incentive funding as part of any updates to existing applicable funding program guidelines to local air pollution control districts and air quality management districts to implement to support the transition to zero-emission small off-road equipment operations.

AB 1279 (The California Climate Crisis Act). AB 1279 establishes the policy of the State to achieve carbon neutrality as soon as possible, but no later than 2045; to maintain net negative GHG emissions thereafter; and to ensure that by 2045 statewide anthropogenic GHG emissions are reduced at least 85 percent below 1990 levels. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO₂ removal solutions and carbon capture, utilization, and storage technologies.

SB 1020 (100 Percent Clean Electric Grid). Signed on September 16, 2022, SB 1020 provides additional goals for the path to the 2045 goal of 100 percent clean electricity retail sales. It creates a target of 90 percent clean electricity retail sales by 2035 and 95 percent clean electricity retail sales by 2040.

SB 905 (Carbon Sequestration Program). Signed on September 16, 2022, SB 905 establishes regulatory framework and policies that involve carbon removal, carbon capture, utilization, and sequestration. It also prohibits the injecting of concentrated carbon dioxide fluid into a Class II injection well for the purpose of enhanced oil recovery.

AB 1757 (Nature-Based Solutions). Signed on September 16, 2022, AB 1757 requires State agencies to develop a range of targets for natural carbon sequestration and nature-based climate solutions that reduce GHG emissions to meet the 2030, 2038, and 2045 goals which would be integrated into a scoping plan addressing natural and working lands.

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs using executive orders. Although not regulatory, they set the state's tone and guide the actions of state agencies.

Executive Order S-3-05. Executive Order S-3-05 was issued on June 1, 2005, which established the following GHG emissions reduction targets:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order S-01-07. Issued on January 18, 2007, Executive Order S-01-07 mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. The executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. CARB adopted the LCFS on April 23, 2009

Executive Order S-13-08. Issued on November 14, 2008, Executive Order S-13-08 facilitated the California Natural Resources Agency development of the 2009 California Climate Adaptation Strategy. Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order S-14-08. Issued on November 17, 2008, Executive Order S-14-08 expands the state's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, Executive Order S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the state come from renewable energy by 2020. CARB adopted the Renewable Electricity Standard on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

Executive Order S-21-09. Issued on July 17, 2009, Executive Order S-21-09 directs CARB to adopt regulations to increase California's Renewable Portfolio Standard (RPS) to 33 percent by 2020. This builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

Executive Order B-30-15. Issued on April 29, 2015, Executive Order B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO₂e (MMTCO₂e). The 2030

target acts as an interim goal on the way to achieving reductions of 80 percent below 1990 levels by 2050, a goal set by Executive Order S-3-05. The executive order also requires the state's climate adaptation plan to be updated every three years and for the state to continue its climate change research program, among other provisions. With the enactment of SB 32 in 2016, the Legislature codified the goal of reducing GHG emissions by 2030 to 40 percent below 1990 levels.

Executive Order B-55-18. Issued on September 10, 2018, Executive Order B-55-18 establishes a goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions. The executive order requires CARB to work with relevant state agencies to develop a framework for implementing this goal. It also requires CARB to update the Scoping Plan to identify and recommend measures to achieve carbon neutrality. The executive order also requires state agencies to develop sequestration targets in the Natural and Working Lands Climate Change Implementation Plan.

Executive Order N-79-20. Issued on September 23, 2020, Executive Order N-79-20 established a goal to end the sales of new internal combustion engine vehicles in the state as soon as possible, and no later than 2035, and continue to phaseout fossil-fueled cars and trucks. By setting a course to end sales of internal combustion passenger vehicles by 2035, the Governor's Executive Order establishes a target for the transportation sector that helps put the state on a path to carbon neutrality by 2045. It is important to note that the Executive Order focuses on new vehicle sales for automakers, and therefore does not require Californians to give up the existing cars and trucks they already own.

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat, even with rapid population growth.

Title 20 Appliance Efficiency Regulations. The appliance efficiency regulations (California Code of Regulations [CCR] Title 20, Sections 1601-1608) include standards for new appliances. Twenty-three categories of appliances are included in the scope of these regulations. These standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy-and water-efficient appliances.

Title 24 Building Energy Efficiency Standards. California's Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6) was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards approved on January 19, 2016 went into effect on January 1, 2017. The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018 and took effect on January 1, 2020. Under the 2019 standards, residential dwellings are required to use approximately 53 percent less energy and nonresidential buildings are required to use approximately 30 percent less energy than buildings under the 2016 standards.

Title 24 California Green Building Standards Code. The California Green Building Standards Code (CCR Title 24, Part 11 code) commonly referred to as CALGreen, is a statewide mandatory construction code developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen standards require new residential and nonresidential buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. The latest CALGreen Code took effect on January 1, 2020 (2019 CALGreen). The latest CALGreen Code took effect on January 1, 2023 (2022 CALGreen). The 2022 CALGreen standards has improved upon the 2019 standards for new construction of, and additions and alterations to, residential and nonresidential buildings.

Regional

SJVAPCD Thresholds

The proposed Project lies within the northern portion of the San Joaquin Valley Air Basin (SJVAB). The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over most air quality matters in the SJVAB and is tasked with implementing programs and regulations required by the federal and State Clean Air Acts. According to the SJVAPCD, impacts are less than significant if a project complies with adopted statewide, regional, or local plan for reduction or mitigation of GHG emissions.

Under CEQA, the SJVAPCD is a commenting responsible agency on air quality within its jurisdiction or impacting its jurisdiction. The SJVAPCD reviews projects to ensure that they would: (1) support the primary goals of the latest Air Quality Plan; (2) include applicable control measures from the Air Quality Plan; and (3) not disrupt or hinder implementation of any Air Quality Plan control measures.

Local

City of Manteca Climate Action Plan

The City of Manteca Climate Action Plan (CAP), approved in 2013, focuses on City operations, facilities and employee actions that will reduce not only GHG emissions but also energy and water consumption, solid waste and fuel consumption. The GHG emission reduction goals require a change from “business as usual” to attain them. The CAP outlines the goal of reducing per capita emissions from 6.9 MTCO_{2e} per person in 2005 to 6.3 in 2035. CAP is being issued in the context of legislative and regulatory action at the federal and state level. The CAP is consistent with CEQA Guidelines 15183.5 Tiering and Streamlining the Analysis of Greenhouse Gas Emissions.

City of Manteca Municipal Code

The City’s Municipal Code includes the following regulations that would reduce GHG emissions from future development; Building Conservation Code (Chapter 15.06), Energy Code (Chapter 15.18), Green Code (Chapter 15.22), and Landscaping (Chapter 17.48).

City of Manteca General Plan

The General Plan includes GHG reduction strategies to help the City sustain its natural resources, grow efficiently, and meet California legal requirements for GHG emissions reduction. Multiple policies and actions in the General Plan have GHG implications including those targeting land use, housing, transportation, water usage, solid waste generation and recycling, and reuse of historic buildings. The policies also include a monitoring component that allows for adaptation and adjustment of City programs and initiatives related to sustainability and associated reductions in GHG emissions. The GHG Reduction Strategy is intended to meet the mandates as outlined in the CEQA Guidelines and the recent standards for “qualified plans” as set forth by SJVAPCD. The City of Manteca has recently adopted and approved the General Plan Update as of April 2023.

The Manteca General Plan Resource Conservation Element includes the following goal for Greenhouse Gas Emissions:

Goal RC-4: Improve climate resiliency through reducing greenhouse gas emissions through sustainable energy, transportation, land use, and local government actions that maximize energy efficiency and reduce energy usage and greenhouse gas emissions.

The Manteca General Plan Resource Conservation Element includes the following policies for Greenhouse Gas Emissions:

Policy RC-4.1: Support the conservation of energy through comprehensive and sustainable land use, transportation, and energy planning, implementation greenhouse gas reduction measures, and inclusive public education and outreach regarding climate adaptation and greenhouse gas emissions to address opportunities to decrease emissions associated with growth, development, and local government operations.

Policy RC-4.2: Support and actively participate with the state, regional, and local agencies and stakeholders toward State greenhouse gas emission reduction goals.

Policy RC-4.3: Maintain an updated Climate Action Plan that addresses State adopted GHG reduction goals and provides effective measures to meet GHG targets.

Policy RC-4.4: Ensure that land use and circulation improvements are coordinated to reduce the number and length of vehicle trips.

Policy RC-4.5: Require private development to incorporate non-traditional non-polluting renewable energy sources such as co-generation, wind, and solar, where feasible, to reduce dependence on fossil fuels and meet climate goals.

Policy RC-4.6: Require all new public and privately constructed buildings to exceed, where feasible, and comply with construction and design standards that promote energy conservation, including the most current “green” development standards in the California Green Building Standards Code.

Policy RC-4.7: Require expanded innovative and green building best practices, where feasible, including, but not limited to, LEED certification for all new development and

retrofitting existing uses, and encourage public and private projects to exceed the most current “green” development standards in the California Green Building Standards Code.

Policy RC-4.10: Encourage measures, including building siting and shading and use of shade trees, to reduce urban heat island effects.

Policy RC-4.11: Support state efforts to power electricity with renewable and zero-carbon resources, such as solar and wind energy.

Policy RC-4.12: Encourage the conservation of petroleum products.

The Manteca General Plan Resource Conservation Element includes the following implementation strategies for Greenhouse Gas Emissions:

Implementation RC-4a: Continue to assess and monitor performance of greenhouse gas emissions reduction efforts, including progress toward meeting longer term GHG emissions reduction goals for 2035 and 2050. Reporting on the City’s progress annually, and schedule public hearings at the Planning Commission and City Council. Updating the 2013 Climate Action Plan by the end of 2023. Update the GHG inventory at least every two years to demonstrate consistency with State-adopted GHG reduction targets, including those targets established beyond 2020. The Climate Action Plan shall be updated by 2025 and subsequently reviewed every 5 years and updated as necessary to be consistent with State-adopted GHG reduction targets, including revisions to GHG reduction measures to ensure effective implementation.

Implementation RC-4c: Continue to review development projects to ensure that all new public and private development complies with or exceeds the California Code of Regulations, Title 24 standards as well as the energy efficiency standards established by the General Plan and the Municipal Code

Implementation RC-4i: Evaluate methods to increase energy efficiency and reduce greenhouse gas emissions, including 1) generating electricity on City-owned sites with solar and other low or zero-carbon emission resources to reduce the City’s carbon footprint, 2) joining or creating a Community Choice Aggregator to encourage affordable access to clean power, 3) replacing City-owned vehicles with hybrid or electric vehicles, 4) increasing energy efficiency in public buildings and infrastructure, and 5) deploying affordable charging and alternative fuel options throughout Manteca.

Implementation RC-4j: Implement transportation measures, as outlined in the Circulation Element, which reduce the need for automobile use and petroleum products.

Implementation RC-4k: Develop a Zero Emissions Vehicle Market Development Strategy that ensures expeditious implementation of the systems of policies, programs and regulations necessary to address Executive Order N-79- 20.

THRESHOLDS

According to the SJVAPCD, impacts are less than significant if a project complies with adopted statewide, regional, or local plan for reduction or mitigation of GHG emissions. The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence on climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

The SJVAPCD's has evaluated different approaches for estimating impacts and summarizing potential GHG emission reduction measures. The SJVAPCD staff has concluded that "existing science is inadequate to support quantification of impacts that project specific GHG emissions have on global climatic change." This is readily understood when one considers that global climatic change is the result of the sum total of GHG emissions, both man-made and natural that occurred in the past; that is occurring now; and will occur in the future. The effects of project specific GHG emissions are cumulative, and unless reduced or mitigated, their incremental contribution to global climatic change could be considered significant.

The Final Draft Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015) provides an approach to assessing a project's impacts on greenhouse gas emissions by evaluating the project's emissions to the "reduction targets" established in ARB's AB 32 Scoping Plan. For instance, the SJVAPCD's guidance recommends that projects should demonstrate that "project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business as Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG."

Subsequent to the SJVAPCD's approval of the *Final Draft Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015), the California Supreme Court issued an opinion that affects the conclusions that should/should not be drawn from a GHG emissions analysis that is based on consistency with the AB 32 Scoping Plan. More specifically, in *Center for Biological Diversity v. California Department of Fish and Wildlife*, the Court ruled that showing a "project-level reduction" that meets or exceeds the Scoping Plan's overall statewide GHG reduction goal is not necessarily sufficient to show that the project's GHG impacts will be adequately mitigated: "the Scoping Plan nowhere related that statewide level of reduction effort to the percentage of reduction that would or should be required from individual projects..." According to the Court, the lead agency cannot simply assume that the overall level of effort required to achieve the statewide goal for emissions reductions will suffice for a specific project.

Given this Court decision, reliance on a 29 percent GHG emissions reduction from projected BAU levels compared to a project's estimated 2020 levels as recommended in the SJVAPCD's guidance documents will not be the basis for an impact conclusion in this EIR. Given that the SJVAPCD staff has concluded that "existing science is inadequate to support quantification of impacts that project specific GHG emissions

have on global climatic change,” this analysis instead relies on a qualitative approach to evaluate the project’s GHG impacts. Specifically, the analysis relies on an assessment of the proposed project for consistency with the City of Manteca CAP, which is specifically designed to reduce GHG emissions in accordance with the GHG emission reduction targets identified by the State of California in the CARB Scoping Plan. Additionally, a qualitative analysis of the proposed project’s consistency with other relevant planning documents and relevant laws is provided herein.

- a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Less than Significant Impact.

Short-Term Construction Greenhouse Gas Emissions

Construction of the project would result in direct emissions of CO₂, N₂O, and CH₄ from the operation of construction equipment and the transport of materials and construction workers to and from the project site. SJVAPCD does not have a threshold for construction GHG emissions, which are one-time, short-term emissions and therefore would not significantly contribute to long-term cumulative GHG emissions impacts of the proposed project. However, the SJVAPCD advises that construction GHG should be disclosed and a determination on the significance of construction GHG emissions in relation to meeting AB 32 GHG reduction goals should be made. Total GHG emissions generated during all phases of construction were combined and are presented in *Table 8: Construction Greenhouse Gas Emissions*. The CalEEMod outputs are contained within the Appendix A.

Table 8: Construction Greenhouse Gas Emissions

Year	MTCO ₂ e ¹
2024	300
2025	511
2026	305
Total	1,116
<i>Amortized</i>	37.2
MTCO ₂ e = metric tons of carbon dioxide equivalent. 1. Due to Rounding, Total MTCO ₂ e may be marginally different from CalEEMod output. Source: CalEEMod version 2016.4.0. Refer to Appendix A for model outputs.	

As shown in *Table 8*, project construction-related activities would generate approximately 1,116 MTCO₂e of GHG emissions over the course of construction. One-time, short-term construction GHG emissions are typically summed and amortized over the project’s lifetime (assumed to be 30 years). It is reasonable to look at a 30-year time frame for buildings since this is a typical interval before a new building requires the first major renovation. The amortized project emissions would be approximately 37.2 MTCO₂e per year. Once construction is complete, the generation of construction-related GHG emissions would cease.

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the project's life. GHG emissions would result from direct emissions such as project generated vehicular traffic, on-site combustion of natural gas, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the project, the energy required to convey water to, and wastewater from the project site, the emissions associated with solid waste generated from the project site, and any fugitive refrigerants from air conditioning or refrigerators. It should be noted that the project would comply with the 2022 Title 24 Part 6 Building Energy Efficiency Standards. The standards require updated residential and nonresidential ventilation requirements, nonresidential lighting requirements, and other green building measures. The project would also comply with the appliance energy efficiency standards in Title 20 of the California Code of Regulations. The Title 20 standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances. The project would be constructed according to the standards for high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems required in 2022 Title 24, Part 11 (CALGreen).

At the State and global level, improvements in technology, policy, and social behavior can also influence and reduce operational emissions generated by a project. The state is currently on a pathway to achieving the Renewable Portfolio Standards goal of 60 percent renewables by 2030 per SB 100.

The majority of project emissions would occur from mobile and energy sources. Energy and mobile sources are targeted by statewide measures such as low carbon fuels, cleaner vehicles, strategies to promote sustainable communities and improved transportation choices that result in reducing VMT, continued implementation of the Renewable Portfolio Standard (the target is now set at 60 percent renewables by 2030), and extension of the Cap-and-Trade program (requires reductions from industrial sources, energy generation, and fossil fuels). The Cap-and-Trade program covers approximately 85 percent of California's GHG emissions as of January 2015. The statewide cap for GHG emissions from the capped sectors (i.e., electricity generation, industrial sources, petroleum refining, and cement production) commenced in 2013 and will decline approximately three percent each year, achieving GHG emission reductions throughout the program's duration. The passage of AB 398 in July 2017 extended the duration of the Cap-and-Trade program from 2020 to 2030. With continued implementation of various statewide measures, the project's operational energy and mobile source emissions would continue to decline in the future.

As discussed in Impact Statement GHG-b, below, the proposed development would be constructed in compliance with the City's CAP which would require the project to achieve GHG emissions reductions by implementing specific reduction strategies. The proposed project, therefore, would be consistent with the City's GHG Reduction and General Plan and would have a less than significant GHG emissions impact.

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

Less Than Significant Impact.

City of Manteca Climate Action Plan Consistency

On October 15, 2013, the City of Manteca adopted their CAP, which is intended to support the goals of AB 32 and SB 32. The CAP is designed to reduce community-related and City operations-related GHG emissions to a degree that would not hinder or delay implementation of AB 32. In order to do such, the City has outlined a course of action for the City government and the community of Manteca to reduce per capita GHG emissions. Projects showing consistency with the CAP would be considered not to contribute significant GHG emissions impacts.

For new development projects constructed in the City of Manteca, the CAP requires the development projects to achieve GHG emissions reductions by implementing specific reduction strategies. The City of Manteca CAP is consistent with the goals presented in AB 32 and SB 32 and, therefore, projects considered consistent with the CAP would be considered to result in a less-than-significant impact related to GHG emissions. The proposed project’s consistency with the reduction strategies in the CAP is assessed in *Table 9: City of Manteca CAP Consistency* below.

Table 9: City of Manteca CAP Consistency

CAP Strategy	Project Consistency
Comply with the applicable land use, sustainable development, and resource conservation policies of the Manteca General Plan	Consistent. The proposed project would not require any land use changes, as the existing designation is consistent with the proposed mixed-use development.
Construct project transportation infrastructure that supports walking, bicycling, and transit use	Consistent. The proposed project would not alter existing street, pedestrian walkways, or bike lanes. Additionally, the project would include connections to the existing pedestrian walkways.
Implement transportation demand management programs in projects with large numbers of employees	Consistent. The City would notify the developer of the proposed project regarding the requirements of SJVAPCD Rule 9410 to implement TDM programs that reduce commute trips.
Design and construct project buildings to exceed Title 24 Energy Efficiency Standards by at least 10 percent	Consistent. The proposed project is consistent with Implementation RC-4c. The project would be required to comply with or exceed all applicable standards set forth in Title 24. Additionally, the proposed would be required to meet or exceed the energy efficiency standards established by the General Plan and Municipal Code.
Implement project buildings including water conservation measures that meet or exceed the California Green Building Code standards 20 percent requirement	Consistent. The proposed project would comply with water conservation per the California Green Building Standards Code, which requires a 20 percent reduction in indoor water use. The

	project would include low flow appliances and fixtures. The project is consistent with Manteca General Plan Policy RC-4.6.
Install project landscaping that meets or exceeds water conservation standards of the City's adopted landscaping ordinance 20 percent reduction requirement	Consistent. The proposed project would comply with the adopted water conservation standards set forth in Chapter 17.48 of the City's Municipal Code.
Develop programs to exceed state recycling and diversion targets by at least 10 percent.	Consistent. Pursuant to Municipal Code Section 13.02.120, all construction materials associated with the proposed project shall be recycled. The City of Manteca offers a free commercial recycling pickup service which would be available to the proposed project during operations.
Source: City of Manteca, <i>Climate Action Plan</i> , October 15 th , 2013.	

Because the strategies included in the CAP would achieve local reductions that are adequate to meet the City's GHG Reduction targets, which is consistent with the AB 32 reduction targets, if a project is consistent with the City's CAP, the project would not be considered to generate GHG emissions, that may result in a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs. As shown in *Table 9*, the proposed project would be consistent with the strategies as described in the City of Manteca CAP and it functions as an implementation project toward achieving the City's CAP. As such, the proposed project would not generate GHG emissions that would have a significant impact on the environment or conflict with any applicable plans, policies, or regulations and impacts related to greenhouse gases are less than significant.

Cumulative Impacts

It is generally the case that an individual project of the project's size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of project-related GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the project as well as other cumulative related projects, would be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As discussed in Threshold GHG-b discussion above, the project would be consistent with the City's CAP. Thus, the project would not conflict with any GHG reduction plan. Therefore, the project's cumulative contribution of GHG emissions would be less than significant and the project's cumulative GHG impacts would also be less than cumulatively considerable.

5.9 HAZARDS AND HAZARDOUS MATERIALS

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

- a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Less Than Significant Impact.

Construction

Any potentially hazardous materials used during project construction would be handled on-site. This generally includes paints and solvents and other petroleum-based products, usually used for on-site construction equipment and for building exterior finishes. The use or handling of these potentially hazardous materials would be short-term only during the construction phase of project. Although these materials could be stored on-site, they would be required to comply with the guidelines established by the City of Manteca. The transport, removal, and disposal of hazardous materials on the project site would be conducted by a permitted and licensed service provider consistent with federal, state, and local requirements including the EPA, the California Department of Toxic Substances Control (DTSC), the California Occupational Safety and Health Administration (Cal/OSHA), Caltrans, the Resource Conservation and Recovery Act, and the Manteca Fire Department (MFD) or through the Conditionally Exempt Small Quantity Generator (CESQG) Program. With the compliance with local, state, and federal regulations short-term construction impacts associated with the handling, transport, use, and disposal of hazardous materials would be less than significant.

Operations

During project operations, widely used hazardous materials common at commercial/retail and office uses include cleaners, pesticides, and food waste would be present. The remnants of these and other products are disposed of as household hazardous waste that are prohibited or discouraged from being disposed of at local landfills. Regular operation and maintenance of the project structures would not result in significant impacts involving use, storage, transport or disposal of hazardous wastes and substances. Use of common commercial/retail and office hazardous materials and their disposal does not present a substantial health risk to the community. Additionally, the project site is not included on the list of hazardous waste sites (Cortese List) compiled by the Department of Toxic Substances Control (DTSC) pursuant to Government Code § 65962.5 and therefore would not release known hazardous materials due to ground-disturbing activities.⁷ Project impacts associated with the routine transport and use of hazardous materials or wastes would be less than significant.

Direct hazardous waste would be generated from landscaping involving the use of pesticides/herbicides and fertilizers. Landscaping maintenance best management practices (BMPs) would be conducted according to the California Stormwater Quality Associations; Stormwater BMPs which would reduce pesticides and fertilizers from running off off-site. Indirect hazardous materials such as sediment, metals, oils and grease, trash/debris and other organic compounds that usually known as stormwater pollutants would be captures via infiltration basins to avoid

⁷ Department of Toxic Substances Control (DTSC) EnviroStor. 2021. *Hazardous Waste and Substances Site List*. <https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=menifee>. Accessed March 2021.

stormwater runoff from seeping off-site consistent with the City's stormwater management requirements.

Hazardous waste generated from the proposed vehicle service station or car dealership could include cleaning agents, sediments, oil/grease, etc. There also would be limited transport and storage of pool cleaning supplies, associated with the proposed hotel. The chemicals used to maintain the pool would be stored in compliance with all applicable Federal, State, and City requirements and any additional laws or regulations. The waste associated with this project would conform to applicable federal, state, and local agency regulations. Proposed development is subject to the requirements of Chapter 13.28 of the Manteca Municipal Code – Stormwater Management and Discharge Control. The purpose of these requirements is to “establish minimum storm water management requirements and controls to protect and safeguard the general health, safety and welfare of the public residing in watersheds within the City of Manteca.” These requirements are intended to assist in the protection and enhancement of the water quality of watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Federal Water Pollution Control Act (Clean Water Act, 33 USC Section 1251 et seq.), Porter- Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) and National Pollutant Discharge Elimination System (“NPDES”) Permit No. CAS000004, as such permit is amended and/or renewed.

Operations of the gas station would include the use, transport, and handling of hazardous materials. Specifically, operation activities would include the regular transportation of gasoline to refill USTs, refilling USTs and pumping gasoline to fuel dispensers, and regular use of the fuel dispensers by motorists. As a result, the proposed gas station could result in potentially adverse impacts to people and the environment as a result of hazardous materials being accidentally released into the environment (e.g., operators or motorists could spill gasoline while refueling, USTs or pipes dispensing fuel from USTs could leak, automobiles could crash into fuel dispensers, or motorists could refuel while having engine running causing a fire hazard). However, the proposed gas station would be required to operate in compliance with all with applicable federal, state, and local requirements which lessen the potential for these impacts. Some of these regulations include:

- California State Water Resources Control Board (SWRCB) Health and Safety Code, Section 25280, underground storage tanks (USTs) installed after 1988 are required to have a leak detection system consisting of at least one of the following detection methods: secondary containment with interstitial monitoring, automatic tank gauging systems (including continuous automatic tank gauging systems), vapor monitoring (including tracer compound analysis), groundwater monitoring, statistical inventory reconciliation, or other method meeting established performance standards.
- Efficacy requirements established by Environmental Protection Agency (EPA) require that leak detection methods be able to detect certain leak rates and that they also give the correct answer consistently. In general, methods must detect the specified leak rate with a probability of detection of at least 95 percent and a probability of false alarm of no more than 5 percent. EPA

found that, with effective leak detection, operators can respond quickly to signs of leaks and minimize the extent of environmental damage and the threat to human health and safety.

- USTs and associated fuel delivery infrastructure (i.e., fuel dispensers) would be required to comply with applicable federal, state, and local regulations, including those provisions established by Section 2540.7, Gasoline Dispensing and Service Stations, of the California OSHA Regulations; Chapter 38, Liquefied Petroleum Gases, of the California Fire Code; the Resource Conservation and Recovery Act; and the County Fire Department Hazardous Materials Division.
- The proposed project would also be required to incorporate high-efficiency Phase I and Phase II enhanced vapor recovery (EVR) systems to capture and control gasoline fumes. EVR refers to a new generation of equipment to control emissions at gasoline dispensing facilities in California. EVR systems collect gasoline vapors that would otherwise escape into the atmosphere during bulk fuel delivery (Phase I) or fuel storage and vehicle refueling (Phase II). Since 2009, the installation of Phase I and Phase II EVR systems has been required for gasoline dispensing facilities.
- The fuel dispensers, USTs, and associated fuel delivery infrastructure would be subject to routine inspection by federal, state, and local regulatory agencies with jurisdiction over convenience service station facilities.
- The handling, transport, use, and disposal of hazardous materials must comply with applicable federal, state, and local agencies and regulations.
- In addition to compliance with local, state, and federal requirements, the project proponent would take additional measures to prevent environmental and safety impacts. Some of these additional measures, which are proposed as project design features, include:
 - Product, vapor, and vent piping would be noncorrosive and would provide three levels of protection. First, product piping would be monitored with pressure line leak detection. Second, piping would be double wall to provide secondary containment. Third, fiberglass piping would be additionally monitored under vacuum in accordance with AB 2481 regulations such that, if a breach is detected in the vacuum, the product delivery system would shut down, and the system would sound an audible alarm.
 - Piping connections to the tanks and dispensers would be flexible. Flexible connectors would be used to prevent rupture from any form of ground movement.
 - Piping would slope to the sumps at the USTs. If a piping leak occurs, the gasoline would flow through the secondary pipe to the sump, where a sensor would be triggered to immediately shut down the system and activate an audible/visual alarm.
- Tanks and dispensers would be equipped with latest Phase I and Phase II EVR vapor recovery air pollution control equipment technology in accordance with the California Air Resources Board regulations and associated Executive Orders. The Phase I EVR equipment would control the vapors in the return path from the tanks back to the tanker truck during offloading filling operations. Phase I EVR systems are 98 percent effective in controlling fugitive emissions from escaping into the environment. Phase II EVR equipment, which also includes “in-station diagnostics,” would control and monitor the vapors in the return path from the vehicles back to the tanks and are 95 percent effective in controlling fugitive emissions from escaping into the environment.

- The UST monitoring system incorporates automatic shutoffs. If gasoline is detected in the sump at the fuel dispenser, the dispenser would shut down automatically, and an alarm would sound. If a problem is detected with a tank, the tank would be automatically shut down, and an alarm would sound. If the product piping system detects a failure of the 0.1 gallons per hour test, the line would be automatically shut down, and the alarm would sound. Pursuant to federal requirements, monitoring equipment must be able to detect a minimum leak of 3 gallons per hour (equivalent to the accuracy of a mechanical leak detector). Each fuel dispenser would include several safety devices. Specifically, each dispenser sump would be equipped with an automatic shutoff valve to protect against vehicle impact. In addition, each fuel hose would include a breakaway device that would stop the flow of fuel at both ends of the hose in the event of an accidental drive-off. Also, each dispenser would be equipped with internal fire extinguishers. Lastly, dispensers would include leak detection sensors connected to the alarm console inside the controller closure.

Therefore, based on compliance with federal, state, and local regulations, and the incorporation of the proposed Project design features, impacts associated with the handling, transport, use, and disposal of hazardous materials and the release of hazardous materials into the environment would be less than significant.

- 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?*

Less Than Significant Impact. As previously mentioned, the project site is previously disturbed undeveloped land, excluding a small portion on the west side of the project site. The project site proposed grading is expected to be a balanced cut and fill requiring no imported soil to backfill excavated areas. This eliminates the potential risk of imported soils being contaminated and requiring appropriate sampling.

The project is located with SR 120 and the Airport Way off ramp to the north, Airport Way to the east, and West Atherton Drive to the south. SR 120 and the Airport Way off ramp, Airport Way, and West Atherton Drive, were all constructed prior to 1992 when lead was still being added to gasoline. Aerially deposited lead (ADL) contaminated soils may exist along roadsides up to 30 feet⁸ from the pavement and within the top 6 inches of the soil. Development of the project does not include any disturbance of soils within 30 ft of SR 120. The off ramp is approximately 30 ft from the project site boundaries and was not heavily utilized prior to 1992, therefore no ADL contaminated soils are expected to be encountered on the north boundary of the project site. Prior to 1992 Airport Way to the east of the project site had not been expanded to include right and left turn lanes. At the time of potential ADL exposure, the distance between the paved road and project site would be greater than 30 ft. Overall, there is not expected to be any ADL contaminated soils on the project site. The project does not propose any widening Airport Way or West Atherton Drive. As such, potential impacts are considered less than significant.

⁸ DTSC factsheet (available online here: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/f0004055-caltrans-fs-a11y.pdf>)

Given the previous uses of the project site it is unlikely hazardous material would be discovered on-site. However, there is the potential for inadvertent discovery of hazardous waste from historic or future activities on or near the project site. At such time the proper agencies (i.e., fire department, DTSC, and/or Cal/OSHA), would be notified to determine what future actions and/or remediation would be required to identify the extent and potential impact to human health.

Overall, with compliance to federal, state, and local regulations, and the incorporation of the proposed Project design features, impacts would be less than significant.

- c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

Less Than Significant Impact. There are no schools within 0.25 miles of the project site and as noted above the project would be in compliance with federal, state, and local regulations. As such, all preventive measures would be in place to limit the hazardous emissions and waste in such a way that would not impact the neighboring school. As such impacts are expected to be less than significant.

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

Less than Significant Impact. There are no superfund sites or hazardous waste and substances sites (Cortese List) within the project site boundaries (Geotracker, 2022). Additionally, there are no known hazardous materials sites within the projects boundaries as identified on the State of California Geotracker Map (State of California, 2021). Therefore, a less than significant impact associated with hazardous materials sites would occur.

- 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. There are no public airports or of public use airports within 2 miles of the project site. The closest airports are Stockton Metropolitan Airport approximately 7.5 miles away, New Jerusalem Airport approximately 6 miles away, and Tracy Municipal Airport approximately 11.7 miles away. Additionally, the project site does not fall within any airport land use plan boundaries and therefore impacts associated with a safety hazard or excessive noise would be less than significant.

- f) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Less Than Significant Impact. The project is not anticipated to physically impede the existing emergency response plans, emergency vehicle access, or personnel access to the site. The project would not change local roadway circulation patterns or access. Emergency vehicle access must be maintained at all times throughout construction activities, in accordance with the County's

routine/standard construction specifications. Further, construction activities would not be permitted to impede emergency access to any local roadways or surrounding properties. All driveways and internal site access roads would be constructed to accommodate all emergency vehicles and personnel. In April 2019, the San Joaquin County Board of Supervisors adopted an Emergency Operations Plan (EOP). The primary purpose of the EOP is to outline the County's all-hazard approach to emergency operations to protect the safety, health, and welfare of its citizens throughout all emergency management mission areas. Given that the proposed project is consistent with the site's current land use and zoning designations, the project would not physically interfere with the EOP. As such, the project would have a less than significant impact associated with the impairment or interference with an adopted emergency response plan.

- g) *Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*

Less Than Significant Impact. The project site is not located within an area identified as having wildland fire potential. Therefore, the project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. Additionally, according to CALFIRE, the project site is not located in a Very High Fire Hazard Severity Zone (VHFHSZ) (CALFIRE, 2007). As such, the project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. A Less Than Significant impact would occur.

Cumulative Impacts

The incremental effects of the proposed project related to hazards and hazardous materials, if any, are anticipated to be minimal, and any effects would be site-specific. The project is also not within an area classified as a VHFHSZ. Therefore, the proposed project would not result in incremental effects to hazards or hazardous materials that could be compounded or increased when considered together with similar effects from other past, present, and reasonably foreseeable probable future projects. The proposed project would not result in cumulatively considerable impacts to or from hazards or hazardous materials.

5.10 HYDROLOGY AND WATER QUALITY

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

- a) *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

Less Than Significant With Mitigation Incorporated. The project site falls within the San Joaquin Valley Groundwater Basin and Eastern San Joaquin sub basin. There are no surface waters or wetlands located on the project site per the National Wetlands Inventory (USFWS, 2022). During the early stages of project construction activities, topsoil would be exposed due to grading, trenching for utilities, and other standard ground-disturbing activities. After grading and prior to overlaying the ground surface with impervious surfaces and structures, the potential exists for wind and water erosion to discharge sediment and/or urban pollutants into stormwater runoff, which could adversely affect water quality downstream. The SWRCB regulates stormwater discharges associated with construction activities where clearing, grading, or excavation results in a land disturbance of one or more acres. The City's National Pollutant Discharge Elimination System (NPDES) permit requires applicants to show proof of coverage under the State's General Construction Permit prior to receipt of any construction permits. The State's General Construction Permit requires that subject projects must file a Notice of Intent with the SWRCB and develop a site-specific Storm Water Pollution Prevention Plan (SWPPP). A SWPPP describes Best Management Practices (BMPs) to control or minimize pollutants from entering stormwater and must address both grading/erosion impacts, and non-point source pollution impacts of the development project. BMPs include, but are not limited to, tracking controls, perimeter sediment controls, drain inlet protection, wind erosion/dust controls, and waste management control. Because the proposed project would disturb greater than one acre of land, the project would be subject to the requirements of the State's General Construction Permit.

Mitigation Measure MM HYD-1 would require the preparation of a SWPPP to ensure that the proposed project prepares and implements a SWPPP throughout the construction phase of the project. By implementing and maintaining proper BMPs, the potential for short-term sediment introduction should be minimized. The SWPPP (Mitigation Measure HYD-1) would reduce the potential for the proposed project to violate water quality standards during construction.

Post construction surface water at the site would be collected and run through a catch basin with an oil & gas separator, to a bioretention basin, and then to a proposed 18-inch storm drain that would connect to an existing stormwater drain in West Atherton Drive. To ensure that such a system is implemented, mitigation is proposed requiring the project applicant, as part of the stormwater quality control plan required under Mitigation Measure MM HYD- 2, to include a drainage plan that demonstrates attainment of pre-project runoff volumes and peak flows prior to release in the City's storm drain system.

With the above compliance with and implementation of MM HYD-1 and MM HYD-2 the project would have a less than significant impact with mitigation related to water quality and water discharge requirements.

Mitigation Measures

MM HYD-1: Prior to the issuance of grading or building permits for each proposed activity within the Master Plan area, the project applicant shall prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) to the City of Manteca for approval that identifies specific actions and Best Management Practices (BMPs) to prevent stormwater pollution during construction activities. The SWPPP shall identify a practical sequence for BMP implementation, monitoring, and maintenance; site restoration; contingency measures; responsible parties; and agency contacts. The SWPPP shall include but not be limited to the following elements:

- Temporary erosion control measures shall be employed for disturbed areas.
- Specific measures shall be identified to protect the onsite open drainages during construction of the proposed project.
- No disturbed surfaces shall be left without erosion control measures in place during the winter and spring months.
- Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures.
- The construction contractor shall prepare Standard Operating Procedures for the handling of hazardous materials on the construction site to eliminate or reduce discharge of materials to storm drains.
- BMP performance and effectiveness shall be determined either by visual means where applicable (e.g., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination (such as inadvertent petroleum release) is required by the RWQCB to determine adequacy of the measure.
- In the event of significant construction delays or delays in final landscape installation, native grasses or other appropriate vegetative cover shall be established on the construction site as soon as possible after disturbance, as an interim erosion control measure throughout the wet season.

MM HYD-2: Prior to the issuance of building or grading permits for any development activities that occur pursuant to the Master Plan, the project applicant shall submit a stormwater quality control plan to the City of Manteca for review and approval. The plan shall include a detailed drainage plan and identify expected site-specific pollutants and required measures to treat those pollutants before they reach the

municipal storm drain. The approved measures shall be incorporated into the proposed project. The plan will describe monitoring and performance measures and standards required in order to ensure water quality is adequately protected during operation of all proposed sites within the project area. Examples of stormwater pollution prevention measures and practices to be incorporated into the plan include but are not limited to:

- Strategically placed bioswales and landscaped areas that promote percolation of runoff
- Pervious pavement
- Roof drains that discharge to landscaped areas
- Trash enclosures with screen walls and roofs
- Stenciling on storm drains
- Curb cuts in parking areas to allow runoff to enter landscaped areas
- Rock-lined areas along landscaped areas in parking lots
- Catch basins
- Oil/water separators
- Regular sweeping of parking areas and cleaning of storm drainage facilities
- Employee training to inform maintenance personnel of stormwater pollution prevention measures

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

And,

e) *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Less Than Significant Impact. As previously mentioned, the project is within the San Joaquin Valley Groundwater Basin and Eastern San Joaquin sub basin. The Department of Water Resources has classified the Eastern San Joaquin County Groundwater Basin (ESJCGB) as a basin in a critical condition of overdraft. Groundwater overdraft in the ESJCGB and the City's groundwater withdrawal rate is of vital concern to the City as this poses a long-term risk to the reliability of the groundwater supply. According to the City's Urban Water Management Plan (UWMP), in order to

reduce dependence on groundwater and ensure sustainable yields, the City's goal is to achieve a 53 percent to 47 percent annual balance of surface water to groundwater, respectively. The combined use of surface water and groundwater by the City is intended to reduce the groundwater withdrawal to the established sustainable yield of one acre-foot per year per acre (AFY/ac). The resulting reduction in groundwater withdrawal has stabilized groundwater levels in the Manteca area. As buildout of the General Plan continues over time, groundwater pumped would remain limited to the safe yield of one AFY/ac, and projected future water demands would be met by a combination of groundwater, imported water, and recycled water.

The proposed project would generate an increase in water demand. However, such demand would be met through a combination of the aforementioned water sources. Development of the project site would not result in an increase in groundwater pumping because the project is consistent with the land uses evaluated in the water use projections of the City's General Plan and UWMP. Build out of the project would not require the City to pump additional groundwater to meet water demand. .

In addition, the project site constitutes a relatively small area compared to the size of the groundwater basin and, thus, does not constitute a substantial source of groundwater recharge. The project would allow for some continued infiltration through unpaved landscaping throughout the site. Therefore, the project would not substantially interfere with groundwater recharge.

Given that the proposed project is consistent with the site's General Plan land use and zoning designations, groundwater use associated with development of the project has been anticipated by the City and accounted for in regional planning efforts, including the projections included in the City's UWMP. Therefore, the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. The proposed project would have a less than significant impact in this regard.

- 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?*
 - iv) *Impede or redirect flood flows?*

Less Than Significant With Mitigation Incorporated. Project construction work could have an impact on surface water quality due to exposure of soils to potential erosion. Construction activities that would disturb more than an acre of land area would need to obtain a Construction General Permit, which would require preparation of a SWPPP that includes construction BMPs to control soil erosion, runoff, and waste discharges, including methods to clean up contaminants if they are released. Implementation of the SWPPP would reduce potential drainage pattern impacts from construction activities to a level that would be less than significant. In addition, the proposed project would not violate any federal, state, or local water quality standards or waste discharge requirements. With the above compliance with and implementation of MM HYD-1 and MM HYD-2 the project would have a less than significant impact related to soil erosion, increased surface water runoff, and polluted surface water runoff.

The project site falls within FEMA's National Flood Hazard FIRM Panels 06077C0620F and 06077C0640F, Zone X Area with Reduced Flood Risk Due to Levee (FEMA, 2020). According to FEMA, Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood. This states that in the unlikely case of levee overtopping or failure, future developments upstream could experience increase flood discharges and potentially flood hazards. Overall, with the project location in an area with reduced flood risk due to a levee the project would not impede or redirect flood flow which would result in a less than significant impact.

In conclusion, the proposed project would not substantially alter the existing drainage pattern of the site or area in a manner which would result in erosion, siltation, or flooding on- or off-site, 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. Consequently, implementation of the proposed project would result in a less than significant impact.

d) *In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

Less Than Significant Impact. The project is not located within a known flood hazard area. The project site is located approximately 60 miles inland from the Pacific Ocean. As such, the potential for the project site to be inundated by a tsunami is negligible. There are no large bodies of water nearby and the project is not located within a seiche zone. No steep slopes are located in the project vicinity; therefore, the risk of mudflow is also negligible. Therefore, no risks associated with the release of pollutants as a result of inundation have been identified and potential impacts would be less than significant.

Cumulative Impacts

The potential impacts related to hydrology and storm water runoff are typically site specific and site specific BMPs are implemented at the project level. The analysis above determined that the implementation of the proposed project would not result in significant impacts. In regard to proposed project impacts that would be considered less than significant, such impacts are not expected to result in

compounded or increased impacts when considered together with similar effects from other past, present, and reasonably foreseeable probable future projects, as other projects would be subject to similar laws and requirements regarding hydrology practices.

Projects would be required to adhere to applicable General Plan goals, policies, and action statements; the City of Manteca's Municipal Zoning Code; the City's Standard Conditions of Approval; and the City's stormwater management guidelines regarding stormwater runoff and infrastructure. In addition, other projects would be required to implement stormwater pollution best management practices during construction and design measures to reduce water quality impacts and comply with the NPDES Municipal Regional Permit. Future developments in the watershed would also be required to comply with the SWRCB and RWQCB. Depending on the size of future projects, they would be required to obtain and comply with all required water quality permits and the Water Quality Control Plan, as needed and prepare and implement SWPPPS, implement construction BMPs, including BMPs to minimize runoff, erosion, and storm water pollution, comply with other applicable requirements. As part of these requirements, projects would be required to implement and maintain source controls, and treatment measures to minimize polluted discharge and prevent increases in runoff flows that could substantially decrease water quality. Conformance to these measures would minimize runoff from those sites and reduce contamination of runoff with pollutants. Therefore, related projects are not expected to cause substantial increases in storm water pollution. With compliance with State and local mandates, cumulative impacts would be less than significant, and project impacts would not be cumulatively considerable.

5.11 LAND USE AND PLANNING

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

a) *Physically divide an established community?*

Less Than Significant Impact. An example of a project that has the potential to divide an established community includes the construction of a new freeway or highway through an established neighborhood. The project proposes a commercial mixed-use development. The project would be located near already established residential community to the south, bound by SR 120 to the north, and the general area is developing with additional general commercial or low-density residential uses. Given the project’s nature, scope, and location, the project would not physically divide an established community. A less than significant Impact would occur in this regard.

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?*

Less Than Significant Impact. The proposed project site is proposed on land currently designated General Commercial in the General Plan Land Use Map and under the Zoning District General Commercial as identified in the Municipal Code. The project would be consistent with the City’s zoning and General Plan land use designation upon approval of individual project specific use permits dependent on commercial use. Therefore, the project would not conflict with the City’s land use plan, policy, or regulation and therefore, would be less than significant.

Cumulative Impacts

Implementation of the project would not create a significant cumulative impact to the surrounding region since its surrounding area is planned for general commercial use. As a result, no cumulative impacts related to land use and planning would occur.

5.12 MINERAL RESOURCES

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

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?*

Less Than Significant Impact. There are no wells located on the project site. The closest wells within a mile of the project site are all dry hole wells that are plugged and not used. The closest Oil and Gas Field in the McMullin Ranch Gas located approximately 2.6 miles south of the project site (CalGEM, 2023). Therefore, there is no significant impact in this regard. Overall, there are no known significant mineral resources on the project site and therefore impacts from the proposed project would be less than significant.

b) *Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

Less Than Significant Impact. The State of California has identified lands in the General Plan Study Area, near the San Joaquin River, as areas of significant mineral resources. In particular, sand deposits in these areas are considered to be of regional significance. However, Brown Sand and Gravel, Incorporated, the only operator within the Study Area (Oakwood Lake Pit), has completed mining operations. Oakwood Lake Resort has been created from reclaimed mined lands. The proposed project would not impact these resources (City of Manteca, 2022).

Additionally, The Surface Mining and Reclamation Act of 1975 (SMARA) requires classification of land into MRZs according to the known or inferred mineral potential of the area. Under SMARA, areas are categorized into MRZs as follows:

- **MRZ-1** Areas where the available geologic information indicates no significant mineral deposits or a minimal likelihood of significant mineral deposits.

- **MRZ-2** Areas where the available geologic information indicates that there are significant mineral deposits or that there is a likelihood of significant mineral deposits. However, the significance of the deposit is undetermined.
- **MRZ-3** Areas where the available geologic information indicates that mineral deposits are inferred to exist; however, the significance of the deposit is undetermined.
- **MRZ-4** Areas where there is not enough information available to determine the presence or absence of mineral deposits.

Designated by the California Geological Survey, the project site falls within MRZ-1 as having no significant mineral deposits present (CGS, 2012). Though the project site is on Portland Cement Concrete (PCC) Grade Aggregate in the Stockton-Lodi Production-Consumption Region, according to the Special Report 160, the area is classified as MRZ-1. MRZ-1 classified areas “have little likelihood of containing significant deposits of PCC-grade aggregate. Deposits that have excessive amounts of clay, silt, organic matter, absorptive rock, alkali-reactive rock, platy rock, or soft rock are unsuitable as sources of PCC aggregate,” (Jensen and Silva, 1989). Therefore, there is no significant impact in this regard. Therefore, the development of the proposed project would not result in the loss of availability of a locally-important mineral resource recovery site and impacts would be less than significant.

Cumulative Impacts

Implementation of the project would not create a significant cumulative impact to the surrounding region as there is no loss of a known mineral resource on the project site or significant mineral deposits present on the project site. As a result, no cumulative impacts related to mineral resources would occur.

5.13 NOISE

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

REGULATORY SETTING

State

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of “normally acceptable”, “conditionally acceptable”, “normally unacceptable”, and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 CNEL and “conditionally acceptable” up to 70 CNEL. Multiple-family residential uses are “normally acceptable” up to 65 CNEL and “conditionally acceptable” up to 70 CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State’s noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as

residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

Local

City of Manteca General Plan

The Manteca General Plan identifies goals, policies, and implementations in the Noise Element. The Noise Element provides a basis for comprehensive local programs to regulate environmental noise and protect citizens from excessive exposure. *Table 10: Maximum Allowable Noise Exposure from Mobile Noise Sources* lists land uses and associated maximum allowable mobile noise in outdoor activity areas and indoor spaces. Additionally, *Table 11: Performance Standards for Stationary Noise Sources or Project Affected by Stationary Noise Sources* lists daytime and nighttime noise level standards for stationary noise sources.

Table 120 Maximum Allowable Noise Exposure from Mobile Noise Sources

Land Use ¹	Outdoor Activity Areas ^{2,3}	Interior Spaces	
		L _{dn} /CNEL, dBA	L _{eq} , dBA ⁴
Residential	60	45	-
Motels/Hotels	65	45	-
Mixed-Use	65	45	-
Hospitals, Nursing Homes	60	45	-
Theatres, Auditoriums	-	-	35
Churches	60	-	40
Office Buildings	65	-	45
Schools, Libraries, Museums	70	-	45
Playgrounds, Neighborhood parks	70	-	-
Industrial	75	-	45
Golf Courses, Water Recreation	70	-	-

1. Where a proposed use is not specifically listed on the table, the use shall comply with the noise exposure standards for the nearest similar use as determined by the City.
2. Outdoor activity areas for residential development are considered to be backyard patios or decks of single family dwellings, and the common areas where people generally congregate for multi-family developments. Outdoor activity areas for non-residential developments are considered to be those common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
3. In areas where it is not possible to reduce exterior noise levels to 60 dB L_{dn} or below using a practical application of the best noise-reduction technology, an exterior noise level of up to 65 L_{dn} will be allowed.
4. Determined for a typical worst-case hour during periods of use.

Source: City of Manteca General Plan Safety Element Table S-1: Maximum Allowable Noise Exposure from Mobile Noise Sources, 2023

Table 11: Performance Standards for Stationary Noise Sources or Project Affected by Stationary Noise Sources^{1,2,3,4}

Noise Level Descriptor	Daytime	Nighttime
	7 AM to 10 PM	10 PM to 7 AM
Hourly L_{eq} , dBA	55	45
<p>1. Each of the noise levels specified above should be lowered by 5 dB for simple noise tones, noises consisting primarily of speech or music, or recurring impulsive noises. Such noises are generally considered to be particularly annoying and are a primary source of noise complaints.</p> <p>2. No standards have been included for interior noise levels. Standard construction practices should, with the exterior noise levels identified, result in acceptable interior noise levels.</p> <p>3. Stationary noise sources which are typically of concern include, but are not limited to, the following: <i>HVAC Systems, Cooling Towers/Evaporative Condensers, Pump Stations, Lift Stations, Emergency Generators, Boilers, Steam Valves, Steam Turbines, Generators, Fans, Air Compressors, Heavy Equipment, Conveyor Systems, Transformers, Pile Drivers, Grinders, Drill Rigs, Gas or Diesel Motors, Welders, Cutting Equipment, Outdoor Speakers, Blowers</i></p> <p>4. The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities, pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.</p>		
<p>Source: City of Manteca General Plan Safety Element Table S-2: Performance Standards for Stationary Noise Sources or Project Affected by Stationary Noise Sources, 2023</p>		

The Manteca General Plan Safety Element includes the following goal for noise:

Goal S-6: Protect the quality of life by protecting the community from harmful and excessive noise.

The Manteca General Plan Update Safety Element includes the following policies for noise:

Policy S-6.1: Incorporate noise considerations into land use, transportation, and infrastructure planning decisions, and guide the location and design of noise-producing uses to minimize the effects of noise on adjacent noise-sensitive land uses, including residential uses and schools.

Policy S-6.3: Areas within Manteca exposed to existing or projected exterior noise levels from mobile noise sources exceeding the performance standards in Table S-1 (*Table 10*) shall be designated as noise-impacted areas.

Policy S-6.4: Require residential and other noise-sensitive development projects to satisfy the noise level criteria in Table S-1 (*Table 10*) and Table S-2 (*Table 11*).

Policy S-6.5: Require new stationary noise sources proposed adjacent to noise sensitive uses to incorporate noise-attenuating measures so as to not exceed the noise level performance standards in Table S-2 (*Table 11*), or a substantial increase in noise levels established through a detailed ambient noise survey.

Policy S-6.6: Regulate construction-related noise to reduce impacts on adjacent uses to the criteria identified in Table S-2 (*Table 11*) or, if the criteria in Table S-2 (*Table 11*) cannot be met, to

the maximum level feasible using best management practices and complying with the MMC Chapter 9.52.

Policy S-6.7: Where the development of residential or other noise-sensitive land use is proposed for a noise-impacted area or where the development of a stationary noise source is proposed in the vicinity of noise sensitive uses, an acoustical analysis is required as part of the development review process so that noise mitigation may be considered in the project design. The acoustical analysis shall:

- Be the responsibility of the applicant.
- Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.
- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
- Estimate existing and projected (20 years) noise levels in terms of the standards of Table S-1 (*Table 10*) and Table S-2 (*Table 11*) and compare those levels to the adopted policies of the Noise Element.
- Recommend appropriate mitigation measures to achieve compliance with the adopted policies and standards of the Noise Element.
- Estimate noise exposure after the prescribed mitigation measures have been implemented.
- If necessary, describe a post-project assessment program to monitor the effectiveness of the proposed mitigation measures.

Policy S-6.8: Apply Noise level criteria applied to land uses other than residential or other noise-sensitive uses shall be consistent with noise performance levels of Table S-1 (*Table 10*) and Table S-2 (*Table 11*).

Policy S-6.9: Enforce the Sound Transmission Control Standards of the California Building Code concerning the construction of new multiple occupancy dwellings such as hotels, apartments, and condominiums.

Policy S-6.15: Recognizing that existing noise-sensitive uses may be exposed to increase noise levels due to circulation improvement projects associated with development under the General Plan and that it may not be feasible to reduce increased traffic noise levels to the criteria identified in Table S-1 (*Table 10*), the following criteria may be used to determine the significance of noise impacts associated with circulation improvement projects:

- Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise

levels due to roadway improvement projects will be considered significant; and

- Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant.

The Manteca General Plan Update Safety Element includes the following implementation strategies for noise:

Implementation S-6a: Require an acoustical analysis that complies with the requirements of S-5.7 where:

- Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels exceeding the levels specified in Table S-1 (*Table 10*) or Table S-2 (*Table 11*).
- Proposed transportation projects are likely to produce noise levels exceeding the levels specified in Table S-1 (*Table 10*) or Table S-2 (*Table 11*) at existing or planned noise sensitive uses.

Implementation S-6b: Assist in enforcing compliance with noise emissions standards for all types of vehicles, established by the California Vehicle Code and by federal regulations, through coordination with the Manteca Police Department and the California Highway Patrol.

Implementation S-6c: Update the City's Noise Ordinance (Chapter 9.52) to reflect the noise standards established in this Noise Element and proactively enforce the City's Noise Ordinance, including requiring the following measures for construction:

- Restrict construction activities to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays. No construction shall be permitted outside of these hours or on Sundays or federal holidays, without a specific exemption issued by the City.
- A Construction Noise Management Plan shall be submitted by the applicant for construction projects, when determined necessary by the City. The Construction Noise Management Plan shall include proper posting of construction schedules, appointment of a noise disturbance coordinator, and methods for assisting in noise reduction measures.
- Noise reduction measures may include, but are not limited to, the following:
 - Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds) wherever feasible

- Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. This muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available. This would achieve a reduction of up to 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- Temporary power poles or zero-emission power sources shall be used instead of generators where feasible.
- Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.
- The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.
- Delivery of materials shall observe the hours of operation described above.
- Truck traffic shall avoid residential areas to the greatest extent feasible.

Implementation S-6d: In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels have a substantial increase. Generally, a 3 dB increase in noise levels is barely perceptible, and a 5 dB increase in noise levels is clearly perceptible. Therefore, increases in noise levels shall be considered to be substantial when the following occurs:

- When existing noise levels are less than 60 dB, a 5 dB increase in noise will be considered substantial;
- When existing noise levels are between 60 dB and 65 dB, a 3 dB increase in noise will be considered substantial;
- When existing noise levels exceed 65 dB, a 1.5 dB increase in noise will be considered substantial.

- For non-transportation noise, a 5 dB increase in noise will be considered substantial.
- For construction noise, an increase in 12 dBA in noise will be considered substantial.

Implementation S-6e: Control noise at the source through use of insulation, berms, building design and orientation, buffer space, staggered operating hours, and similar techniques. Where such techniques would not meet acceptable levels, use noise barriers to attenuate noise associated with new noise sources to acceptable levels.

Implementation S-6f: Require that all noise-attenuating features, including soundwalls and quieter pavements, are designed to be attractive and to minimize maintenance.

City of Manteca Municipal Code

According to Manteca Municipal Code, Section 17.58.050, Noise Standards, construction activities that create a noise disturbance across a residential property line daily between the hours of 7:00 p.m. and 7:00 a.m. are prohibited, except for emergency work of public service utilities. The Municipal Code does not establish quantitative noise limits for construction activities in the City. *Table 12: City of Manteca Zoning Ordinance Noise Standards* shows the City of Manteca standards for maximum noise level at the property line or in the M-1 and M-2 districts, at a point 500 feet from exterior wall of the use or at the property line of the use, whichever is less.

Table 12: City of Manteca Zoning Ordinance Noise Standards

Receiving Land Use Category	Time Period	Maximum Allowable Noise Levels (L _{dn} /CNEL, dB)
Single-Family and Limited Multiple-Family	10 pm – 7 am	50
	7 am – 10 pm	60
Multiple-Family, Public Institution, and Neighborhood Commercial	10 pm – 7 am	55
	7 am – 10 pm	60
Medium and Heavy Commercial	10 pm – 7 am	60
	7 am – 10 pm	65
Light Industrial	Anytime	70
Heavy Industrial	Anytime	75
Source: City of Manteca Municipal Code, Table 17.58.050-1		

Section 17.58.050 D states that construction activities are exempt from Section 17.58.050, when conducted as part of an approved Building Permit. Subsection 17.58.050(E)(1) states that operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work daily between the hours of 7:00 p.m. and 7:00 a.m., so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities is prohibited.

Section 17.58.050 E states that loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects on private property between the hours of 10:00 p.m. and 7:00 a.m. in a manner to cause a noise disturbance is a violation of the municipal code standards.

Further, Section 9.52.040 F states that loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects are prohibited by residential receptors between the hours of 10 p.m. and 8 a.m. in such a manner as to cause noise disturbance, except for solid waste collection which is exempt from the noise limitations within Section 17.58.050. Section 9.52.040 K states that the use or operation of any construction equipment by residential receptors between the hours of 8:00 p.m. and 7:00 a.m. and is sufficiently loud as to be plainly audible at the property line of the property from which the sound is emanating is prohibited and violates Section 9.52.040 (Ord. 1374 § 1, 2007).

EXISTING CONDITIONS

Existing Noise Sources

The City of Manteca is impacted by various noise sources. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in the City. Other sources of noise are the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the City that generate stationary-source noise.

Noise Measurements

To determine ambient noise levels in the project area, four short-term (10-minute) noise measurements were taken using a Larson Davis SoundExpert LxT Type I integrating sound level meter on July 13, 2023; refer to Appendix F: Noise Measurement Field Data for existing noise measurement data.

As shown in *Table 13: Noise Measurement Locations*, short-term measurement 1 (ST-1) was taken to represent the ambient noise level to the east of the project site on South Airport Way, ST-2 and ST-3 were taken to represent existing noise levels at the residential uses to the south and southeast of the project site, respectively, and ST-4 was taken to represent the existing noise level at the residential uses to the east of the project site along West Atherton Drive. The primary noise source during the noise measurements was traffic on South Airport Way, West Atherton, and State Route 120 (SR-120). *Table 13: Noise Measurements* provides the ambient noise levels measured at these locations.

Table 13: Noise Measurements

Site No.	Location	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L _{peak} (dBA)	Time	Date
ST-1	Airport Way on the western side of project site boundary	64.8	51.7	79.5	103.7	11:11 a.m. to 11:21 a.m.	07/13/2023
ST-2	2079 Goldeneye Way	72.7	54.0	93.4	115.4	10:53 AM to 11:03 AM	07/13/2023
ST-3	1939 Goldfinch Way	61.7	53.6	73.5	95.2	10:13 AM to 10:23 AM	07/13/2023

ST-4	1401 Hazelnut Way	64.8	57.9	78.7	106.5	10:31 AM to 10:41 AM	07/13/2023
Source: Noise Measurements taken by Kimley-Horn on July 13 th in 2023.							

Existing Mobile Noise

Existing roadway noise levels were calculated for the roadway segments in the project vicinity. This task was accomplished using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and existing traffic volumes from the project Traffic Analysis (Appendix B). The noise prediction model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (also referred to as energy rates) used in the FHWA model have been modified to reflect average vehicle noise rates identified for California by Caltrans. The Caltrans data indicates that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. The average daily noise levels along roadway segments in proximity to the project site is included in *Table 18: Existing and Project Traffic Noise*. California Highway 120 is also located north of the project site and generates a high mobile noise levels at the site.

Existing Stationary Noise

The primary sources of stationary noise in the project vicinity are those associated with the operations of nearby residential uses to the east and south of the site, existing mixed-used commercial and industrial to the north of the project site, and vacant land to the west and south. The noise associated with these sources may represent a single-event noise occurrence, short-term noise, or long-term/continuous noise.

Sensitive Receptors

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. The surrounding land uses are predominantly residential, with commercial uses to the north beyond SR-120. As shown in *Table 14: Sensitive Receptors* sensitive receptors near the project site include single-family residences, parks, and religious centers. These distances are from the project site to the sensitive receptor property line.

Table 14: Sensitive Receptors

Receptor Description	Distance and Direction from the Project Site
Single-family residential along Hazelnut Way	90 feet southeast
Single-family residential along Goldfinch Way	95 feet southeast
Single-family residential along Goldeneye Way	95 feet southeast
Dutra Southeast Park	500 feet southeast

Single-family residential along Hearth Dr.	540 feet southwest
Source: Google Earth, 2023. 1. Distance measured from the property line of the Project Site to the nearest receptor property line.	

ENVIRONMENTAL IMPACTS

- a) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less Than Significant Impact.

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods surrounding the construction site. Project construction would occur approximately 90 feet from the nearest sensitive receptor to the southeast. However, construction activities would occur throughout the project site and would not be concentrated at a single point near sensitive receptors. Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources, such as industrial machinery. During construction, exterior noise levels could affect the residential neighborhoods near the construction site.

Construction activities associated with development of the project would include site preparation, grading, paving, building construction, and architectural coating. Such activities may require graders, scrapers, and tractors during site preparation; graders, dozers, and tractors during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, and paving equipment during paving; and air compressors during architectural coating. Grading and excavation phases of project construction tend to be the shortest in duration and create the highest construction noise levels due to the operation of heavy equipment required to complete these activities. It should be noted that only a limited amount of equipment can operate near a given location at a particular time. Equipment typically used during this stage includes heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. Operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three to four minutes at lower power settings. Other primary sources of noise would be shorter-duration incidents, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts, which would last less than one minute. According to the applicant, no pile-driving would be required during construction and the project would comply with Section 17.58.050(E) of the City's Municipal Code which limits allowable construction hours between 7:00 a.m. and 7:00 p.m.

Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in *Table 15: Typical Construction Noise Levels*.

Table 15: Typical Construction Noise Levels

Equipment	Maximum Noise Level (dBA) from Source ¹ 50 feet (reference level)
Air Compressor	80
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator ²	56
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77
Roller	85
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Truck	84
1. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1 + 20\log(d_1/d_2)$ Where: $QWdBA_2$ = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance.	
2. Generator would include CAT XQ60 Rental Generator Set.	
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.	

The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to calculate noise levels during construction activities (refer to Appendix F). RCNM is a computer program used to assess construction noise impacts and allows for user-defined construction equipment and user-defined noise limit criteria. Noise levels were calculated for each construction phase and are based on the equipment used, distance to the nearest property/receptor, and acoustical use factor for equipment.

The noise levels calculated in *Table 16: Project Construction Noise Levels*, show estimated exterior construction noise at the closest receptors to the southeast and east of the project site. Based on calculations using the RCNM model, construction noise levels would range from approximately 56.7 dBA Leq to 75.6 dBA Leq at the nearest sensitive receptors.

Implementation S-6d of the Manteca General Plan determines that a 12 dBA increase in noise from the existing ambient noise level would be considered substantial. The exterior noise level of sensitive receptors calculated using the RCNM model is combined with the ambient exterior noise measured using the dBA Leq values of the closest noise measurement locations. If the difference of the combined noise level and exterior noise level exceeds a 12 dBA increase, the ambient noise during construction activities would have a significant impact related to creation of a substantial temporary or periodic increase in ambient noise levels in the project vicinity. However, as shown in *Table 16*, project construction noise levels do not exceed an increase of 12 dBA in noise at the closest sensitive receptors, and therefore, a less than significant impact would occur.

Table 16: Project Construction Noise Levels

Construction Phase	Receptor Location			Ambient Noise at Receptor (dBA Leq)	Modeled Exterior Noise Level (dBA Leq) ²	Combined Noise at Receptor (dBA Leq)	Noise Level Increase (dBA Leq) ³	Threshold Exceeded
	Land Use	Direction	Distance (feet) ¹					
Site Preparation	Residence along Hazelnut Way	Southeast	200	64.8	75.6	75.9	11.1	No
	Residence along Goldfinch Way	Southeast	355	61.7	70.6	71.1	9.4	No
Grading	Residence along Hazelnut Way	Southeast	200	64.8	75.1	75.5	10.7	No
	Residence along Goldfinch Way	Southeast	355	61.7	70.1	70.7	9.0	No
Building Construction	Residence along Hazelnut Way	Southeast	200	64.8	74.0	74.5	9.7	No
	Residence along Goldfinch Way	Southeast	355	61.7	69.0	68.7	8.0	No
Paving	Residence along Hazelnut Way	Southeast	200	64.8	74.5	74.9	10.1	No
	Residence along Goldfinch Way	Southeast	355	61.7	69.5	70.2	8.5	No
Architectural Coating	Residence along Hazelnut Way	Southeast	200	64.8	61.7	66.5	1.7	No
	Residence along Goldfinch Way	Southeast	355	61.7	56.7	62.9	1.2	No

¹ Distance is from the nearest receptor to the main construction activity area on the project site. Not all equipment would operate at the closest distance to the receptor.
² Modeled noise levels conservatively assume the simultaneous operation of all pieces of equipment.
³ Implementation S-6d of the Manteca General Plan determines that a 12 dBA increase in noise from the existing ambient noise level would be considered substantial.

Construction Traffic Noise

Construction is estimated to be approximately 30 months. Construction noise may be generated by large trucks moving materials to and from the project site. Large trucks would be necessary to deliver building materials as well as remove dump materials. Excavation, cut, and fill would be required. Grading over the entire site would consist of 30,000 cubic yards of cut and fill balanced on site. With cut and fill balanced on site, there is no import or export involved. Based on the CalEEMod default assumptions for this project, the project would generate the highest number of daily trips during the construction phase. The model estimates that the project would generate 18

daily worker trips during site preparation. Grading would have 25 daily worker trips and 15 daily trips for paving. Building construction would have 80 daily worker trips and 35 daily vendor trips. Architectural coating would require 16 daily worker trips.

In general, a 3-dBA increase in traffic noise is barely perceptible to people, while a 5-dBA increase is readily noticeable. Traffic volumes on project area roadways would have to approximately double for the resulting traffic noise levels to generate a 3-dBA increase.⁹ Airport Way south of CA-120 eastbound ramps has approximately 14,760 average daily trips.¹⁰ A maximum of 115 daily project construction trips (total of 80 daily worker trips and 35 daily vendor trips) would not triple the existing traffic volume per day. Therefore, construction related traffic noise would not be noticeable and would not create a significant noise impact.

Operations

Implementation of the project would create new sources of noise in the project vicinity. The major noise sources associated with the project that would potentially impact existing and future nearby residences include the following:

- Mechanical equipment (i.e., trash compactors, air conditioners, etc.);
- Gas dispensing activities;
- Restaurant and commercial retail activities (e.g., outdoor seating and dining areas, vehicle queuing, speaker systems);
- Delivery trucks activities at the loading areas (i.e., maneuvering and idling trucks, loading/unloading, and equipment noise);
- Parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by); and
- Landscape maintenance activities.

The closest sensitive receptors are located approximately 90 feet to the southeast. Policy S-6.5 of the City's General Plan establishes the noise level requirements as thresholds for stationary noise sources. *Table 11* limits hourly average noise levels from stationary sources to 55 dBA Leq between the hours of 7:00 a.m. and 10:00 p.m. and to 45 dBA Leq between the hours of 10:00 p.m. and 7:00 a.m. Furthermore, Section 17.58.050 of the City's Municipal Code limits exterior noise levels to 60 dBA Ldn between the hours of 7:00 a.m. and 10:00 p.m. and to 50 dBA Ldn between the hours of 10:00 p.m. and 7:00 a.m. at single-family residential land uses.

Stationary Noise Sources

Implementation of the project would create new sources of noise in the project vicinity from mechanical equipment, truck loading areas, parking lot noise, and landscape maintenance. *Table 17: Operational Noise Levels*, shows the noise levels generated by various stationary noise sources and the resulting noise level at the nearest receiver. *Table 17* also shows the project's compliance

⁹ According to the California Department of Transportation, *Technical Noise Supplement to Traffic Noise Analysis Protocol* (September 2013), it takes a doubling of traffic to create a noticeable (i.e., 3 dBA) noise increase.

¹⁰ City of Manteca, *General Plan Draft EIR*, 2023.

with the General Plan Policy S-6.5, and the Municipal Code. Each stationary source is discussed below. Mechanical Equipment

Regarding mechanical equipment, the project would generate stationary-source noise associated with heating, ventilation, and air conditioning (HVAC) units. HVAC units typically generate noise levels of approximately 52 dBA at 50 feet.¹¹ HVAC equipment would be situated on the store roof. The nearest sensitive receptor is located 160 feet away from Parcel 1, 315 feet away from Parcel 2, and 200 feet from Parcel 3. The loudest HVAC noise levels would attenuate approximately 41.9 dBA at 160 feet. *Table 17* shows that mechanical equipment would not exceed the City's General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

The project may include the operation of mechanical equipment at the car dealership in Parcel 3. Typical noise levels from vehicle maintenance center reach 78.2 dBA at 50 feet.¹² At this distance, the closest sensitive receptor would be located approximately 250 feet away would experience a noise level of 64.2 dBA without considering any attenuating surfaces. Therefore, noise levels experienced at the residences would be lower than levels shown above. Furthermore, the vehicle maintenance center would only operate during the daytime and would be located within the building. Thus, noise levels from any vehicle maintenance equipment would not exceed the City's General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

Gas Station Activities

The project would include 22 standard fueling stations which would generate similar noise sources as parking spaces. These typically include vehicular circulation, louder engines, car alarms, door slams, and human voices. These sources typically generate noise levels ranging from 53 to 63 dBA at 50 feet. The nearest sensitive receptor is 120 feet away from the gas station in Parcel 1 where the noise level would be approximately 53.4 dBA. *Table 17* shows that parking lot and gas station activities would not exceed the City's General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

Loading Area Noise

The project is a commercial development that would include deliveries. The primary noise associated with deliveries is the arrival and departure of trucks. Operations of the proposed project would potentially require a mixture of deliveries from vans, light trucks, and heavy-duty trucks. Normal deliveries typically occur during daytime hours. During loading and unloading activities, noise would be generated by the trucks' diesel engines, exhaust systems, and brakes during low gear shifting' braking activities; backing up toward the docks/loading areas; dropping down the dock ramps; and maneuvering away from the docks. Major Building A would have two delivery truck loading and unloading stations along the back of the building which faces northwest. The loading area at the project site in Parcel 1 would be located approximately 600 feet away from the nearest sensitive receptor along West Atherton Drive. The noise level from the closest sensitive

¹¹Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

¹²Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

receptor would be approximately 42.4 dBA. Typically, heavy truck operations generate a noise level of 64 dBA at a distance of 50 feet. While there would be temporary noise increases during truck maneuvering and engine idling, these impacts would be of short duration and infrequent. *Table 17* shows that truck and loading area noise would not exceed the City's General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

Parking Areas

Traffic associated with parking areas is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Parking lot noise can also be considered a "stationary" noise source. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA at 50 feet. Conversations in parking areas may also be an annoyance to sensitive receptors. Sound levels of speech typically range from 33 dBA at 48 feet for normal speech to 50 dBA at 50 feet for very loud speech. Parking noise would not meet the criteria within *Table 11* that specifies noise level standards should be lowered from 55 to 50 dBA as parking does not have recurring impulsive noises, or create such noises that are generally considered to be particularly annoying. Surface parking within Parcel 1 is within 120-180 feet from the nearest sensitive receptor, producing an approximate noise level of 49.9-53.4 dBA. Parking areas would be located closer, approximately 100 feet from sensitive receptors in Parcel 2 and Parcel 3. At this distance, noise levels would reach 55.0 dBA. *Table 17* shows that parking area noise would not exceed the City's General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

Drive-Thru Operations

The proposed project would include several drive-thru restaurants with menu boards and intercoms that would be located near the restaurant building. Project noise sources from drive-thru operations include amplified speech from the intercom, idling vehicles, and vehicles circulating along the drive-thru lane. The measured noise level associated with active drive-thru operations is 64 dBA at a distance of 20 feet. Within Parcel 1, the proposed menu board and intercom are located within approximately 350 feet from the nearest sensitive receptors (single-family residences to the east) the proposed menu board and intercom, and as close as 350 feet from the drive-thru lane/queuing area. A distance of 350 feet from the menu boards and intercoms would produce an estimated noise level of approximately 37 dBA. *Table 17* shows that drive-thru operation noise would not exceed the City's General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

Landscape Maintenance Activities

Development and operation of the project includes new landscaping that would require periodic maintenance. Noise generated by a gasoline-powered lawnmower is estimated to be approximately 70 dBA at a distance of five feet. Landscape maintenance activities would be 50 dBA at 50 feet away and 44 dBA at the closest sensitive receptor approximately 100 feet away.

Maintenance activities would operate during daytime hours for brief periods of time as allowed by the City Municipal Code and would not permanently increase ambient noise levels in the project vicinity and would be consistent with activities that currently occur at the surrounding uses. Landscaping activities within Parcel 1, Parcel 2, and Parcel 3 can occur as close as 90 feet to the nearest sensitive receptor, producing an approximate noise level of 44.9 dBA. *Table 17* shows that landscape maintenance noise would not exceed the City’s General Plan standards in Policy S-6.5, and Section 17.58.050 of the Municipal Code.

Table 17: Operational Noise Levels

Land Use	Distance (feet) ¹	Reference Level at 50 ft (dBA)	Section 17.58.050 of the Municipal Code			General Plan Policy S-6.5		
			Noise Level at Receiver (dBA) ⁷	Exterior Noise Standard (L _{dn}) ^{8,9}	Exceed Threshold	Noise Level at Receiver (dBA) ⁷	Exterior Noise Standard (L _{eq})	Exceed Threshold
Mechanical Equipment²								
Residences (Parcel 1)	160	52	41.9	60	No	41.9	55	No
Residences (Parcel 2)	315		36.0		No	36.0		No
Residences (Parcel 3)	200		40.0		No	40.0		No
Loading Area³								
Residences (Parcel 1)	600	64	42.4	60	No	42.4	55	No
Parking Area/Gas Dispensing Activities⁴								
Residences (Parcel 1)	120	61	53.4	60	No	53.4	55	No
Residences (Parcel 2)	100		55.0		No	55.0		No
Residences (Parcel 3)	100		55.0		No	55.0		No
Drive-Thru Operations⁵								
Residences (Parcel 1)	450	56	37.0	60	No	37.0	55	No
Landscape Maintenance⁶								
Residences (Parcel 1)	90	50	44.9	60	No	44.9	55	No
Residences (Parcel 2)	90		44.9		No	44.9		No
Residences (Parcel 3)	90		44.9		No	44.9		No
<ol style="list-style-type: none"> The distance is from the location of the operational noise source to the sensitive receptor property line. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, <i>Noise Navigator Sound Level Database with Over 1700 Measurement Values</i>, July 6, 2010. Loading dock reference noise level measurements conducted by Kimley-Horn on December 18, 2018. Kariel, H. G., <i>Noise in Rural Recreational Environments</i>, Canadian Acoustics 19(5), 3-10, 1991. Drive-thru noise sample collected by Kimley-Horn on August 17, 2018. U.S. EPA, <i>Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances</i>, 1971. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1 + 20\log(d_1/d_2)$, where dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance. Table 17.58.050-1 of the City's Municipal Code limits hourly average noise levels to 60 dBA L_{eq} between the hours of 7:00 a.m. and 10:00 p.m. and to 50 dBA L_{eq} between the hours of 10:00 p.m. and 7:00 a.m. at single family residential land uses. Policy S-6.6 of the City's General Plan establishes the noise level requirements as thresholds for stationary noise sources. Municipal Code Table 9-2 limits hourly average noise levels to 55 dBA L_{eq} between the hours of 7:00 a.m. and 10:00 p.m. and to 45 dBA L_{eq} between the hours of 10:00 p.m. and 7:00 a.m. 								

Combined Stationary Noise

General Plan Implementation Policy S-6d states that a substantial increase in noise would occur when non-transportation noise increases ambient noise by more than 5 dBA. Stationary noise would cause the highest increase at residences located across Parcel 1 along West Atherton Drive. Ambient noise levels were measured to be 61.7 dBA at these sensitive receptors and the ambient noise levels would increase to 62.5 dBA with the incorporation of the stationary sources nearby. Therefore, noise level would have the largest increase of 0.8 dBA at nearby sensitive receptors. Thus, the project would be consistent with Implementation Policy S-6d and impacts would be less than significant.

Offsite-Traffic Noise

Implementation of the project would generate increased traffic volumes along study roadway segments. The project is expected to generate 6,477 net new daily trips, which would result in noise increases on project area roadways. In general, a traffic noise increase of less than 3 dBA is barely perceptible to people, while a 5-dBA increase is readily noticeable (Manteca General Plan, 2023). Generally, traffic volumes on project area roadways would have to approximately double for the resulting traffic noise levels to increase by 3 dBA. Therefore, permanent increases in ambient noise levels of less than 3 dBA are considered to be less than significant.

As shown in *Table 18: Existing and Project Traffic Noise*, the existing traffic-generated noise level on project area roadways is between 56.8 dBA L_{dn} and 63.7 dBA L_{dn} at 100 feet from the centerline. As previously described, L_{dn} is 24-hour average noise level with a 10 dBA “weighting” added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

Traffic noise levels for roadways primarily affected by the project were calculated using the FHWA’s Highway Noise Prediction Model (FHWA-RD-77-108). Traffic noise modeling was conducted for conditions with and without the project, based on traffic volumes (Appendix B). As noted in *Table 10*, project noise levels 100 feet from the centerline would range from 57.7 dBA L_{dn} to 64.8 dBA L_{dn} . The project would have the highest increase of 3.1 dBA on West Atherton Drive between Airport Way and Sage Sparrow Avenue. The 3.1 dBA increase is above the perceptible 3.0 dBA noise level increase. The resulting 63.3 dBA L_{dn} noise level is above the City’s normally acceptable 60 dBA threshold for residential uses. However, there is an existing 10-foot concrete wall between the roadway and residences across Atherton Drive. This wall would provide a minimum 5 dBA reduction for the noise experienced at the residences.¹³ Therefore, noise levels experienced would be approximately 58.3 dBA which is below the normally acceptable noise levels for residences. Therefore, the project would have a significant impact on existing traffic noise levels.

¹³ FHWA, Noise Barrier Design Handbook, 1976.

Table 18: Existing and Project Traffic Noise

Roadway Segment	Existing Conditions		With Project		Project Change from Existing Conditions	Significant Impact?
	ADT	dBA L _{dn} ¹	ADT	dBA L _{dn} ¹		
Airport Way						
CA-120 East Bound Ramps to West Atherton Drive	14,760	63.7	18,970	64.8	1.1	No
West Atherton Drive to Woodward Avenue	9,760	61.8	10,408	62.1	0.3	No
West Atherton Drive						
Airport Way to Sage Sparrow Avenue	5,100	60.4	9,958	63.3	2.9	No
Sage Sparrow Avenue to Sparrowhawk Street	4,895	60.2	9,882	63.3	3.1	No ²
East of Sparrowhawk Street	3,910	56.8	4,882	57.7	0.9	No
ADT = average daily trips; dBA = A-weighted decibels; L _{dn} = day-night noise levels 1. Traffic noise levels are at 100 feet from the roadway centerline. 2. The existing 10-foot CMU wall located along northern boundary of the residences on Atherton Drive would provide noise level reduction of approximately 5 dBA. Therefore, noise levels would 58.3 dBA and would be below the normally acceptable levels for residential uses. Source: Based on traffic data provided by TKJM, 2023. Refer to Appendix F for traffic noise modeling assumptions and results.						

b) *Generation of excessive groundborne vibration or groundborne noise levels?*

Less Than Significant Impact.

Construction

Increases in groundborne vibration levels attributable to the project would be primarily associated with construction-related activities. Construction on the project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience cosmetic damage (e.g.,

plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on soil composition and underground geological layer between vibration source and receiver.

The FTA has published standard vibration velocities for construction equipment operations. In general, depending on the building category of the nearest buildings adjacent to the potential pile driving area, the potential construction vibration damage criteria vary. For example, for a building constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.50-inch per second (in/sec) peak particle velocity (PPV) is considered safe and would not result in any construction vibration damage.

Table 19: Typical Construction Equipment Vibration Levels, lists vibration levels at 25 feet, 50 feet, and 100 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in *Table 19*, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity.

Table 19: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity At 25 feet (in/sec)	Peak Particle Velocity At 50 feet (in/sec)	Peak Particle Velocity At 75 feet (in/sec)
Large Bulldozer	0.089	0.032	0.011
Loaded Trucks	0.076	0.027	0.010
Rock Breaker	0.059	0.021	0.007
Jackhammer	0.035	0.012	0.004
Small Bulldozer/Tractors	0.003	0.001	0.004
1. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018; D = the distance from the equipment to the receiver.			
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.			

As shown in *Table 19*, the highest vibration levels are achieved with the large bulldozer operations. This construction activity is expected to take place during grading. The nearest structure is approximately 100 feet from the active construction zone. As indicated in *Table 19*, construction vibration levels at the nearest sensitive receptors (100 feet away) would not exceed 0.017 in/sec PPV and/or the FTA’s 0.20 PPV threshold. In addition, construction activities would occur throughout the project site and would not be concentrated at the point closest to the nearest structure. Therefore, vibration impacts associated with the project would be less than significant.

Operations

The project would not generate groundborne vibration that could be felt at surrounding uses. Project operations would not involve railroads or substantial heavy truck operations, and therefore would not result in vibration impacts at surrounding uses. As a result, impacts from vibration associated with project operation would be 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 a 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 nearest airport to the project site is the Stockton Metropolitan Airport located approximately 7.7 miles north of the project site. The project site lies outside of the CNEL noise contours shown in the Stockton Metropolitan Airport Land Use Compatibility Plan Update report published in May 2016 and amended in February 2018.¹⁴ Aircraft-related noise at the project site would not substantially increase ambient noise levels. Exterior noise levels resulting from aircraft would be compatible with the proposed project. By ensuring compliance with the City's normally acceptable noise level standards, interior noise levels would also be considered acceptable with aircraft noise. Therefore, the project would not expose people residing or working in the project area to excessive airport- or airstrip-related noise levels and no mitigation is required.

Cumulative Impacts

Cumulative Construction Noise

The project's construction activities, when properly mitigated, would not result in a substantial temporary increase in ambient noise levels. The City limits construction to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Friday. The project would contribute to other proximate construction noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the project's construction-related noise impacts would be less than significant following compliance with local regulations.

Construction activities at other planned and approved projects would be required to take place during daytime hours, and the City and project applicants would be required to evaluate construction noise impacts and implement mitigation, if necessary, to minimize noise impacts. Each project would be required to comply with the applicable City of Manteca Municipal Code limitations on allowable hours of construction. Therefore, project construction would not contribute to cumulative impacts and impacts in this regard are not cumulatively considerable.

¹⁴ San Joaquin County's Aviation System Stockton Metropolitan Airport, *Airport Land Use Compatibility Plan Update for Stockton Metropolitan Airport*, May 2016.

Cumulative Operational Noise

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the project and other foreseeable projects. Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the project and other projects in the vicinity. However, noise from generators and other stationary sources could also generate cumulative noise levels.

Stationary Noise

As discussed above, impacts from the project's operations would be less than significant. Due to site distance, intervening land uses, and the fact that noise dissipates as it travels away from its source, noise impacts from on-site activities and other stationary sources would be limited to the project site and vicinity. No known past, present, or reasonably foreseeable projects would compound or increase the operational noise levels generated by the project. Thus, cumulative operational noise impacts from related projects, in conjunction with project-specific noise impacts, would not be cumulatively significant.

Traffic Noise

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects. Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the project and other projects in the vicinity. Cumulative increases in traffic noise levels were estimated by comparing the Existing and Future Without Project scenarios to the Future Plus Project scenario. The traffic analysis considers cumulative traffic from future growth assumed in the transportation model, as well as cumulative projects.

A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The following criteria is used to evaluate the combined and incremental effects of the cumulative noise increase.

- **Combined Effect.** The cumulative with project noise level ("Cumulative With Project") would cause a significant cumulative impact if a 3.0 dB increase over "Existing" conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use. Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project.
- **Incremental Effects.** The "Cumulative With Project" causes a 1.0 dBA increase in noise over the "Cumulative Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon and reduces as distance from the source increases. Consequently, only the proposed project and growth due to occur in the general area would contribute to cumulative noise impacts.

Table 20: Cumulative Plus Project Conditions Predicted Traffic Noise Levels – Project Buildout, identifies the traffic noise effects along roadway segments in the project vicinity for “Existing,” “Cumulative Without Project,” and “Cumulative With Project,” conditions, including incremental and net cumulative impacts.

Table 20: Cumulative Plus Project Conditions Predicted Traffic Noise Levels – Project Buildout

Roadway Segment	Existing dBA CNEL ¹	Future Without Project dBA CNEL ¹	Future With Project dBA CNEL ¹	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
				Difference In dBA Between Existing and Future With Project	Difference In dBA Between Future Without Project and Future With Project	
Airport Way						
CA-120 East Bound Ramps to West Atherton Drive	63.7	65.3	66.0	2.3	0.7	No
West Atherton Drive to Woodward Avenue	61.8	63.4	63.6	1.8	0.2	No
West Atherton Drive						
Airport Way to Sage Sparrow Avenue	60.4	62.0	64.2	3.8	2.2	No ¹
Sage Sparrow Ave to Sparrowhawk Street	60.2	61.8	64.1	3.9	2.3	No ¹
East of Sparrowhawk Street	56.8	58.4	59.1	2.3	0.7	No
ADT = average daily trips; dBA = A-weighted decibels; CNEL= Community Equivalent Noise Level Traffic noise levels are at 100 feet from the roadway centerline. 1. Noise levels would get a 5 dBA reduction from the existing 10-foot CMU wall by residences on Atherton Drive. Therefore, noise levels would 58.3 dBA and would be below the normally acceptable levels for residential uses. Source: Based on traffic data provided by TJKM (2023) in Appendix B. Refer to Appendix F for traffic noise modeling results.						

A significant cumulative traffic noise increase would be identified if a cumulative traffic noise increase of greater than the 3 dBA is calculated, and the relative contribution from project traffic is calculated to contribute more than 1 dBA to this cumulative impact. There are two road segments that exceed both the combined and incremental effects, Atherton Way from Airport Way to Sage Sparrow Avenue, and Atherton Way from Sage Sparrow Avenue to Sparrowhawk Avenue. However, as mentioned previously, there is an existing 10-foot CMU wall located between the road and residences that would result in at least a 5 dBA reduction to the noise experienced at receptors. Therefore, noise levels experienced at residential receptors would be 59.2 and 59.1 dBA on the two roadway segments. Since traffic noise is below the normally acceptable levels for residences, cumulative traffic noise at this roadway segment would be less than significant. The proposed project’s contribution to noise levels would not be cumulatively considerable.

5.14 POPULATION AND HOUSING

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

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

Less Than Significant Impact. The project site is currently zoned General Commercial and designated Commercial in the General Plan. The proposed project does not propose any residential uses that could generate new residents within the City. The proposed project includes general retail, restaurants, and convenience store and gas station, a hotel, and a car dealership. The hotel would not support permanent housing and wouldn't induce substantial population growth. The retail shops, restaurants, convenience store and gas station, and car dealership would serve the existing population in the surrounding area and would not substantially induce unplanned population growth. In addition, project construction and operation would create new employment opportunities. The workers are anticipated to come from within the City or surrounding jurisdictions and commute daily to the site. Although it is possible that demand for workers could induce some people to move to the area this is anticipated to be a small number relative to total demand for construction workers and permanent employees. It is anticipated that with the recent and continuing growth of the City, there are adequate numbers of people already residing in the area to work on or at the project site. Therefore, impacts from the proposed project to unplanned population growth are less than significant.

b) *Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

Less than significant Impact. As mentioned above, the project site is not zoned or designated in the General Plan to be used for residential. There are no housing units, or structures on the project site, therefore the project would not displace housing or people, or require construction of replacement housing elsewhere. Therefore, impacts would be less than significant.

Cumulative Impacts

Overall, the project site would serve the existing demand from the population within the local vicinity. The proposed project would be consistent with the planned land uses in the City's General Plan and the population and employment projections for the City and the region as a whole. Impacts from cumulative growth are considered in the context of their consistency with these local and regional planning efforts. Therefore, the proposed project would not cause a cumulatively considerable impact on population and housing and no mitigation is required.

5.15 PUBLIC SERVICES

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

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

i) *Fire protection?*

Less Than Significant Impact. There are 5 Fire Stations located within the City of Manteca. Fire Station 242 at 1154 S. Union Road is the closest to the project site, located approximately 0.9 miles northeast. The City Manteca’s Fire Department will review the development plans for the project to ensure the development adheres to the Fire Departments requirements and the project would include the payment of standard City development impact fees, which include a fee for fire protection service impacts. The nominal population growth associated with the project would incrementally increase the demand for fire protection and emergency medical services to the project site. The project falls within the existing service area for the fire department and would not have a significant effect on response times. Additionally, the project does not propose, and would

not create a need for, new/physically altered fire protection facilities, thus, less than significant environmental impacts would occur in this regard. Finally, the project would be constructed to meet the latest CBC requirements and the project is subject to fire suppression development impact fees and other standards and conditions required by the City and County Fire. As such, a less than significant impact would occur.

ii) Police protection?

Less Than Significant Impact. The City of Manteca's Police Department is under contract to provide police protection and public safety services within the city, including the project site. The Manteca Police Department is located approximately 1.5 miles northeast from the project site. The nominal population growth associated with the project would incrementally increase the demand for police protection services to the project site. However, the proposed mixed-use development would not result in any unique or more extensive crime problems that cannot be handled with the existing level of police resources. Additionally, the project would not have a significant impact on police response times, because the project site is within the Police's existing service area. Therefore, project impacts concerning police protection services would be less than significant and no mitigation is required. Additionally, the project does not propose, and would not create a need for, new/physically altered police protection facilities; thus, less than significant environmental impacts would occur in this regard.

iii) Schools?

Less Than Significant Impact. The following schools are in the local vicinity of the project site; Sierra High School approximately 0.9 mile to the northeast, Veritas School approximately 1.1 miles east, Sequoia Elementary School approximately 1.5 miles northeast, and Brock Elliot Elementary approximately 0.7 miles northeast. The nominal population growth due to the proposed project would not cause any significant increase of demand on the above listed schools in the area. According to Government Code Section 65996, the payment of development fees authorized by SB 50 are deemed to be full and complete school facilities mitigation. The project does not include any residential development, and would not generate new students for local schools. As such, impacts are anticipated to be less than significant impact.

iv) Parks?

Less Than Significant Impact. Parks in the local vicinity to the project site include Bella Vista Park approximately 0.4 miles, Dutra Estates Park approximately 0.8 miles, Dutra Southeast Park approximately 0.2 miles, and Manteca Watershed by Costco located on the other side of SR 120 approximately 0.4 miles. Due to the project proposed uses, it is not anticipated that the project would create additional need for recreational facilities. The project overall would only result in nominal population growth. Although the project would bring new residents to the general area, the use of surrounding parks and other facilities has been accounted for in the General Plan. The proposed mixed-use development would not significantly increase the demand of such services and a less than significant impact would occur.

v) *Other public facilities?*

Less Than Significant Impact. Other public facilities in the area such as health care, production, commercial, retail, residential, etc. would not be adversely impacted because the proposed Project is consistent with the City of Manteca and is consistent with City Zoning Maps. Therefore, impacts would be less than significant.

Cumulative Impacts

The project is consistent with current General Plan and Zoning designations, the project would not result in substantial incremental effects to public services or facilities that could be compounded or increased when considered together with similar effects from other past, present, and reasonably foreseeable projects. The project alone would not result in cumulatively considerable impacts to public services or facilities.

5.16 RECREATION

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) 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?			X	

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. The closest existing neighborhood park is Dutra Southeast Park at 1850 Sparrowhawk St, Manteca, located in a residential community, approximately 0.2 miles southeast of the project site. Due to the nature of commercial uses proposed on the project, it is not likely to generate an increase in population that would use existing recreational facilities in the area. The proposed commercial uses on the project site include general retail, restaurants, a convenience store and gas station, a hotel, and a car dealership . The commercial uses typically do not lead to an increase in use of the recreational facilities, such that substantial physical deterioration of recreational facilities would occur or be accelerated. Therefore, the project would have a less than significant impact.

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 not include recreational facilities or require the construction or expansion of recreational facilities that would have an adverse physical effect on the environment. Therefore, the project would have a less than significant impact.

Cumulative Impacts

Development of the proposed does not impact any existing recreation facilities and would not create a substantial population increase to impact existing recreational facilities. Additionally, the project does not include the construction of recreational facilities. Therefore, no cumulative impacts on recreational facilities would occur.

5.17 TRANSPORTATION

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

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

Less Than Significant With Mitigation Incorporated. Airport Way is a two-lane arterial road that passes through residential and agricultural uses. It is planned to be a four-lane facility. West Atherton Drive is a four-lane collector road located south of SR 120 and oriented in a west to east direction. There is a class I bike path parallel to West Atherton Drive. The roadway has sidewalks on both sides of West Atherton Drive. Currently, the only marked crosswalks are available in the vicinity of the project are located at the intersection of Airport Way and West Atherton Drive. Manteca Transit Route 4 loop service runs along Airport Way from West Woodward Avenue connecting Manteca Transit Center on Main Street. The closest bus stop is located near the intersection of Airport Way and Peregrine Street within a quarter-mile of the project site. The project proposes four driveways along West Atherton Drive and one driveway on Airport Way. The proposed site would utilize the existing sidewalk facility available on West Atherton Drive and Airport Way and also provide pedestrian walkways to access the stores and parking spots.

A Traffic Impact Study was conducted and summarized in Appendix B, a technical memorandum prepared by TJKM in July, 2023 and updated on February 2024. The study provides an overview on trip generation, site access, circulation, and potential impacts on nearby intersections. The report focuses on three study intersections: 1) the intersection at West Atherton Drive and Airport Way and 2) the intersection at West Atherton Drive and Sage Sparrow Avenue 3) the intersection at

West Atherton Drive and Sparrowhawk Street. The study focused on multiple scenarios in the AM and PM peak hours to determine the potential project impacts associated with traffic:

- Existing 2023 Conditions
- Existing 2023 Conditions plus Project Conditions
- Cumulative 2040 Conditions
- Cumulative 2040 plus Project Conditions

Analysis of environmental impacts at the study intersections were based on the concept of Level of Service (LOS). LOS is measured on a scale from A to F, with A representing the best traffic conditions and F the worst. The City of Manteca's General Plan establishes an LOS Standard that will guide street improvements in the City while meeting the City's goals of developing an efficient circulation system that promotes travel via other modes. The General Plan requires a vehicular LOS of D or better at all streets and intersections, except in the Downtown area where right-of-way is limited, pedestrian, bicycle, and transit mobility are most important and vehicular LOS is not a consideration; see *Table 21: Existing 2023 plus Project Conditions—Intersection Level of Service Analysis Results* (City of Manteca, 2013; Appendix B).

To understand the potential impacts to LOS, project trip generation was analyzed in the study. Project trip generation can be distilled to two categories: internal trips and pass-by trips. Internal trips consist of the total person trips generated by a site that are made entirely within the site while pass-by trips are defined as trips made as an intermediate stop on the way from an origin to a primary trip destination without a route diversion (Appendix B).

Without reductions applied, the proposed development would generate an estimated 14,980 trips during a typical weekday, with 1,024 trips occurring during the AM commuter peak hour and 1,119 trips occurring during the commuter PM peak hour. When considering reductions, the proposed development is anticipated to generate an estimated 6,477 net new trips during a typical weekday, with 512 net new trips occurring during the AM commuter peak hour and 425 net new trips occurring during the commuter PM peak hour; this is illustrated in Table 5 of the study (Appendix B).

Regarding the existing conditions, the study concluded that all but one of the study intersections operate at LOS D or better during both the AM and PM peak hours. The intersection of West Atherton Drive and Airport Way operates at a LOS E in the p.m. peak hour. Cumulatively, all study intersections would operate at LOS D or better during both peak hours. The scenario assumes that the intersection of West Atherton Drive at Airport Way is signalized as a mitigation measure to a planned development directly northwest of the intersection, and that Airport Way is widened to four lanes from the current two lanes.

Regarding the existing conditions plus implementation of the proposed project, all but two of the study intersections operate at LOS D or better during both the AM and PM peak hours. Specifically, the intersection of West Atherton Drive at Airport Way would operate at LOS F during both peak

hours while the intersection of Sage Sparrow Avenue at West Atherton Drive operates at LOS F in only the AM peak hour. Cumulatively with the proposed project implemented, all but the previously mentioned study intersections would operate at LOS D or better for both AM and PM peak hours.

Table 21: Existing 2023 plus Project Conditions—Intersection Level of Service Analysis Results

No.	Intersection	Control Type ⁽¹⁾	Peak Hour ⁽²⁾	Existing 2023 Conditions		Existing 2023 plus Project Conditions			Signal Warrants Satisfied
				Delay ⁽³⁾ (sec/veh)	LOS ⁽⁴⁾	Delay ⁽³⁾ (sec/veh)	LOS ⁽⁴⁾	Change in Delay (sec)	
1	W. Atherton Dr. & Airport Way	AWSC	a.m.	32.6	D	80.1	F	47.5	Yes
			p.m.	44.3	E	55.9	F	11.6	Yes
2	Sage Sparrow Ave. & W. Atherton Dr.	TWSC	a.m.	12.3	B (NB)	285.5	F (NB)	273.2	Yes
			p.m.	10.2	B (NB)	23.1	C (NB)	12.9	No
3	Sparrowhawk St. & W. Atherton Dr.	TWSC	a.m.	13.1	B (NB)	22.6	C (NB)	9.5	No
			p.m.	10.4	B (NB)	12.8	B (NB)	2.4	No
4	Airport Way & Airport Dwy.	OWSC	a.m.	-	-	21.6	C (WB)	-	-
			p.m.	-	-	17.4	C (WB)	-	-
5	W. Atherton Dr. & W. Atherton Dwy. West	OWSC	a.m.	-	-	10.5	B (SB)	-	-
			p.m.	-	-	9.8	A (SB)	-	-
6	W. Atherton Dr. & W. Atherton Dwy. Central	OWSC	a.m.	-	-	0.0	A (SB)	-	-
			p.m.	-	-	0.0	A (SB)	-	-
7	W. Atherton Dr. & W. Atherton Dwy. East	OWSC	a.m.	-	-	8.9	A (SB)	-	-
			p.m.	-	-	8.7	A (SB)	-	-

Source: Appendix B

Notes: (1) Signal = Signalized; AWSC = All-Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; DNE = Does Not Exist (2) a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour (3) Delay measured in seconds per vehicle. For signalized and all-way stop controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach. (4) LOS = Level of Service

During construction, the predominant vehicle route (for haul trucks) would follow Airport Way from SR 120 and would then turn east onto West Atherton Drive. The presence of large and slow-

moving vehicles and construction equipment on streets in the vicinity of the project site may result in potential hazards to motorists. Additionally, project construction activities may result in temporary lane closures along Airport Way and West Atherton Drive. However, the construction phase would be temporary not resulting in long-term construction traffic.

Accordingly, mitigation is proposed requiring the project applicant to implement a Construction Traffic Control Plan during construction activities to minimize impacts on surrounding roadways and nearby parking areas, as provided under Mitigation Measure MM TRANS-1. Additionally, MM TRANS-2 would be implemented and consists of making minor changes at the West Atherton Drive and Airport Way, Sage Sparrow Avenue and West Atherton Drive, and Sparrowhawk Street and West Atherton Drive intersections that could improve LOS. With implementation of MM TRANS-1 and MM TRANS-2, potential impacts are considered less than significant.

Mitigation Measures

MM TRANS-1: Prior to issuance of grading permits, the applicant shall submit a Construction Traffic Control Plan to the City of Manteca for review and approval. The plan shall identify the timing and routing of all major construction equipment and trucking to avoid potential traffic congestion and delays on the local street network. The plan shall encourage the use of SR 120, Airport Way, and West Atherton Drive wherever practical. Anticipated temporary road closures should be identified, along with safety measures and detours. If necessary, construction equipment and materials deliveries shall be limited to off-peak hours to avoid conflicts with local traffic circulation. The plan shall also identify suitable locations for construction worker parking.

MM TRANS-2: For the intersection at West Atherton Drive and Airport Way, the following improvements would reduce potential impacts to LOS to that intersection and cumulatively:

- Signalize the intersection (if not already completed);
- Widen the westbound approach to include one left turn lane, two through lanes, and one right turn only lane with a permitted-overlap phase with the southbound left movement;
- Restripe the dedicated northbound right-turn lane to a through-right lane;
-
- Adjust signal timing to optimize green times for each movement.

For the intersection at Sage Sparrow Avenue and West Atherton Drive, the following improvements would reduce potential impacts to LOS to that intersection and cumulatively:

- Restripe the northbound approach to include a right-turn only lane;
- Install raised medians and channelizing island;
- Provide an eastbound left-turn lane into the project driveway
- Provide an eastbound acceleration lane for left-turns out of the project driveway.

For the intersection at Sparrowhawk Street and West Atherton Drive, the following improvements would reduce potential impacts to LOS to that intersection and cumulatively:

- Signalize the intersection;
- Protect eastbound left and westbound left-turn movements;
- Adjust signal timing to optimize green times for each movement.

For the intersection at Airport Way and the project driveway, the following improvements would reduce potential impact to LOS to that intersection and cumulatively:

- Widen Airport Way to two lanes in each direction (related to Airport Way and West Atherton Drive improvements).

For the intersection at the project driveway and West Atherton Drive between Sage Sparrow Avenue and Sparrow Hawk Street, the following improvements would reduce potential impact to LOS to that intersection and cumulatively:

- Widen W. Atherton Drive (related to Airport Way and West Atherton Drive improvements).

b) *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

Less Than Significant Impact. CEQA Guidelines Section 15064.3 states that “vehicle miles traveled” (VMT) is the preferred metric evaluating transportation impacts, rather than LOS. VMT measures the total miles traveled by vehicles generated by a project. While LOS focuses on motor vehicle traffic, VMT accounts for the total environmental impact of a project on transportation, including use of travel modes such as buses or bicycles. Section 15064.3(b) sets forth the criteria for analyzing transportation impacts using the preferred VMT metric.

SB 743 is part of a long-standing policy effort by the California legislature to improve California’s sustainability and reduce greenhouse gas emissions through denser infill development, a reduction in single occupancy vehicles, improved mass transit, and other actions. Recognizing that the current environmental analysis techniques are, at times, encouraging development that is

inconsistent with this vision, the legislature has taken the extraordinary step to change the basis of environmental analysis for transportation impacts from Level of Service (LOS) to Vehicle Miles Travelled (VMT). VMT is understood to be a good proxy for evaluating Greenhouse Gas (GHG) and other transportation related impacts that the State is actively trying to address. While the use of VMT to determine significant transportation impacts has only been considered recently, it is by no means a new performance metric and has long been used as a basis for transportation system evaluations and as an important metric for evaluating the performance of Travel Demand Models.

In January 2019, the Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of SB 743 modifications. The Guidelines' changes were approved by the Office of Administrative Law and are now in effect. Specific to SB 743, Section 15064.3(c) states, "A lead agency may elect to be governed by the provisions of this section immediately. The provisions apply statewide as of July 1, 2020."

To help aid lead agencies with SB 743 implementation, the Governor's Office of Planning and Research (OPR) produced the Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) that provides guidance about the variety of implementation questions they face with respect to shifting to a VMT metric. Key guidance from this document includes:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis.
- OPR states that by adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Generally, retail development including stores smaller than 50,000 square feet might be considered local serving.
- OPR recommends that where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.
- Lead agencies have the discretion to set or apply their own significance thresholds.

Retail Less *than* 50,000 Square Feet

The OPR Advisory specifically addresses some of the key issues surrounding how a local-serving retail store should be evaluated in terms of its VMT impact. As described, the threshold for significance for retail uses is "a net increase." This means that if a proposed retail use results in additional VMT, it would result in a finding of significance.

Local-serving retail primarily serves pre-existing needs (i.e., it does not generate new trips because it meets existing demand). Therefore, local-serving retail uses can be presumed to reduce trip

lengths when a new store is proposed. Essentially, the assumption is that someone who already travels to a similar store will travel to a newly constructed local-serving store because of its closer proximity. The proposed retail store would not be fulfilling an unmet need and would not be generating new trips. As a result, trips on the roadway network become shorter. Conversely, residential and office land uses often drive new trips, given that they introduce new participants to the transportation system.

The OPR Advisory provides for a general threshold of 50,000 square feet per establishment as an indicator as to whether a retail store can be considered local-serving or not. As the restaurant, general retail, and gas station/convenience store combination land uses of the proposed project are all under 50,000 square feet per establishment, the VMT related impacts from these land uses would be less than significant.

The *Technical Advisory on Evaluating Transportation Impacts in CEQA* provides for a general threshold of 50,000 square feet per establishment as an indicator as to whether a retail store can be considered local-serving or not. Specifically, this project would not consist of any individual retail stores that would be over 50,000 square feet. The proposed project would include three separate buildings for major retail stores that would range from 23,000 square feet to 10,000 square feet, two separate buildings for smaller retail stores, or shops, that range from 8,000 square feet to 6,000 square feet, four separate buildings for restaurants, or pads, that range from 5,500 square feet to 2,800 square feet, a convenience store that would be 2,500 square feet, and a building for a car dealership that would be 30,942 square feet.

Hotel

Similar to retail land uses, typical hotels such as that proposed by the project most often serve pre-existing needs when their client base is staying at the hotel not because of the amenities, but because of the area surrounding the hotel. Alternatively, destination hotels do not serve pre-existing needs as they offer special amenities that are not offered elsewhere, and guests typically spend the majority of their time on the destination hotel property. The Great Wolf Lodge Manteca, which is connected to the Great Wolf Lodge Water Park, is an example of a destination hotel.

The hotel component of the proposed project would be a typical hotel and it is likely that guests are choosing the hotel because they are traveling to Manteca for a variety of reasons, such as business in the area, visiting family and friends, attending baseball tournaments at Big League Dreams Manteca, or visiting Great Wolf Lodge Water Park.

The development of a new typical hotel near a cluster of existing hotels located near a local destination or attraction can be presumed to reduce trip lengths. Essentially, a trip to a hotel is expected to occur due to someone planning to travel to Manteca, or the immediate area, but the proximity of the hotel to the surrounding attractions would drive the length of that trip and the resultant impact to the overall transportation system. Most often this means that the impact to the transportation system would be negligible or reduced by the introduction of a new hotel to an area where people are already traveling to and planning on staying in unless the hotel significantly

affects the local supply of rooms or introduces a significant new attraction. As demonstrated by the Initial Study / Mitigated Negative Declaration of the nearby The Crossings development, the proposed hotel would be in regional proximity to other existing hotels. As such, the proposed hotel would not significantly affect the local supply of rooms, and thus would have less than significant impacts on VMT related impacts.

Automobile Dealership

The proposed automobile dealership would accommodate an existing automobile dealership in Manteca that is seeking to move to a new location. The proposed automobile dealership would constitute as an infill development since it is not adding a new dealership to Manteca. Since this development is not building a completely new dealership, but instead merely moving a dealership to another location, the result would be no net increase in VMT. Thus, the proposed automobile dealership would not result in a net increase in VMT and would result in VMT-related impacts that are less than significant.

Therefore, all components of the proposed project would result in shorter trips and therefore lower VMT. The project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) and impacts would be less than significant.

- c) *Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Less Than Significant Impact. Within the project site the proposed drive aisles would be of adequate size to provide sufficient space to accommodate standard auto traffic and, where needed, delivery vehicles. The hotel driveway aisles would accommodate two cars driven parallel to each other. Adequate space would be provided behind the major store for loading trucks to access the facility. The loading trucks for the major store would use the final driveway before the proposed hotel for entry. Since the trucks are expected to arrive/depart at off-peak hours, it won't impact the pedestrians accessing the major store. Three restaurants/coffee shops with drive-through windows would have enough space to queue outside the facility. The planned coffee shop is designed with double lane storage to accommodate a higher volume of queuing. The proposed project is not anticipated to increase hazards due to geometric design or incompatible use and impacts would be less than significant.

- d) *Result in inadequate emergency access?*

Less Than Significant Impact. Emergency vehicle access would be maintained at all times throughout construction activities, in accordance with the City's routine/standard construction specifications. Further, construction activities would not impede emergency access to any local roadways or surrounding properties. All driveways and internal site access roads would be constructed to accommodate all emergency vehicles and personnel. Further emergency access discussion is located within Section 5.9, Hazards. Project impacts regarding emergency access would be less than significant.

Cumulative Impacts

The project would improve LOS at two intersections with the construction of signals and reduce VMT by shortening trips. Therefore, the proposed project would not result in incremental effects to transportation that could be compounded or increased when considered together with similar effects from other past, present, and reasonably foreseeable probable future projects. Potential impacts are not cumulatively considerable and less than significant.

5.18 TRIBAL CULTURAL RESOURCES

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
TRIBAL CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of 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:				
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)?		X		
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?		X		

a) *Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of 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:*

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)?*

And,

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 With Mitigation Incorporated. A Cultural Resources Study for the project site was conducted by Rincon Consultants, Inc. in September 2023. As previously mentioned, there were no historical resources found on-site, this is substantiated through a CHRIS records search, background research, review of historical topographic and aerial imagery, a Sacred Land File Search (through the Native American Heritage Commission (NAHC)), and a pedestrian survey. However, the absence of substantial surface prehistoric or historic-period archeological remains within the project vicinity and the existing level of disturbance does not preclude the possibility of subsurface resources. Though the circumstances would present a low possibility, with the implementation of mitigation measures MM CUL-1 and MM CUL-2, impacts are considered less than significant.

The City has notified California Native American tribes of the proposed project and an invitation to consult with the City as provided under Assembly Bill 52. The notifications were distributed based on a list provided by the NAHC of tribes who may have knowledge of cultural resources in the project area. Representatives from the following tribes were contacted:

- Buena Vista Rancheria of Me-Wuk Indians
- California Valley Miwok Tribe
- Confederated Villages of Lisjan Nation
- Lone Band of Miwok Indians
- Muwekma Ohlone Indian Tribe of the SF Bay Area
- North Valley Yokuts Tribe
- Tule River Indian Tribe
- Wilton Rancheria
- Wuksachi Indian Tribe/Eshom Valley Band

These notification letters were distributed to identified Native American Tribes on **February 28, 2024**, with no response at the time of this publication. These letters are on file at the City of Manteca Community Development Department.

Impacts on tribal cultural resources are considered less than significant with the implementation of mitigation.

Cumulative Impacts

The combination of the proposed project as well as past, present, and reasonably foreseeable projects in the local area would be required to comply with all applicable State, federal, and County and local regulations concerning preservation, salvage, or handling of cultural and paleontological resources, including compliance with required mitigation. Similar to the proposed project, these projects also would be required to implement and conform to mitigation measures, which would be likely to reduce impacts to less than significant. Although in the process of development, some known or unknown resources may be lost, it is not anticipated that these impacts would be cumulatively considerable. In addition,

implementation of Mitigation Measures **MM CUL-1** and **MM CUL-2**, would reduce project-specific impacts to a less than significant level. Therefore, the project's contribution to cumulative impacts would be less than significant.

5.19 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
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?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

a) *Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

And,

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?*

Less Than Significant Impact. The proposed project would connect to the City’s existing water and sanitary sewer system. As part of this connection, the proposed project would not be required to increase the size of existing water and sanitary sewer lines in order to serve the proposed project. The proposed project would be consistent with planned growth in the General Plan, in that it would be consistent with the type of development planned for this area in the General Plan. The City has sufficient capacity in its domestic water and sanitary sewer systems to accommodate development within the proposed project. Thus, the project would not require the extension of sewer mains, water lines, storm water drainage lines, or natural gas pipelines to the project site, as these lines are already available in West Atherton Drive. Only connecting lines from the project site to these existing facilities would be required. Electrical and telecommunication lines are available in the project vicinity and can be extended to the project site as necessary. The project does not propose the relocation of any existing utility lines or facilities. Project impacts would be less than significant.

- b) *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. In 2016, the City adopted the City of Manteca 2015 UWMP, as required by the Urban Water Management Planning Act of 1983. The UWMP serves as a long-term planning document for sustainable water supply, and includes a description of water sources, historical and projected water use, and a comparison of water supply and demand during normal and dry years. The UWMP has identified regional water demand in normal, single dry, and multiple dry years in five-year increments. Water demand projections were based on buildout of the City’s General Plan. The UWMP indicates that the City would have up to approximately 30,680 acre-feet per year (AFY) for 2025 and 30,990 AFY for 2030 in a normal year (City of Manteca, 2016). *Table 22* and *Table 23* show the projected water supply and demand totals during a normal year and during a single dry year, respectively. *Table 24* shows the projected supply and demand totals under multiple dry year conditions for the first, second, and third years.

Table 22: Water Supply and Demand – Normal Year (AFY)

	2020	2025	2030	2035	2040
Supply Totals	23,100	30,680	30,990	31,390	31,250
Demand Totals	20,410	23,320	25,060	28,270	31,290
Difference	2,690	7,360	5,930	3,120	(-)40
NOTES: (-) indicates a negative value SOURCE: City of Manteca 2015 Urban Water Management Plan, July 2016					

Table 23: Water Supply and Demand – Single Dry Year (AFY)

	2020	2025	2030	2035	2040
Supply Totals	20,220	26,050	26,360	26,760	26,620
Demand Totals	20,410	23,320	25,060	28,270	31,290
Difference	(-)190	2,730	1,300	(-)1,510	(-)4,670
NOTES: (-) indicates a negative value SOURCE: City of Manteca 2015 Urban Water Management Plan, July 2016					

Table 24: Water Supply and Demand – Multiple Dry Years (AFY)

		2020	2025	2030	2035	2040
1 st Year	Supply Totals	21,580	28,230	28,540	28,940	28,800
	Demand Totals	20,410	23,320	25,060	28,270	31,290
	Difference	1,170	4,910	3,480	670	(-)2,590
2 nd Year	Supply Totals	21,850	28,670	28,980	29,380	29,240
	Demand Totals	20,410	23,320	25,060	28,270	31,290
	Difference	1,440	5,350	3,920	1,110	(-)2,050
3 rd Year	Supply Totals	21,280	27,760	28,070	28,470	28,330
	Demand Totals	20,410	23,320	25,060	28,270	31,290
	Difference	870	4,440	3,010	200	(-)2,960
NOTES: (-) indicates a negative value SOURCE: City of Manteca 2015 Urban Water Management Plan, July 2016						

Based on the above, the City of Manteca anticipates a water supply shortage by 2040 in multiple-dry years. However, as described in the UWMP, three water supply options were identified to address future water supply shortfalls:

1. Reclaimed water: The City can develop their recycled water infrastructure to offset the groundwater used for park irrigation with reclaimed water. The quantity of groundwater replaced by recycled water can then be used for potable municipal uses, while staying within the sustainable yield constraints of 1 AFY/Ac.
2. Additional untreated surface water: As the City annexes areas, the raw water that irrigated the annexed lands could either be treated for potable municipal uses or used to offset the potable water used for irrigation.
3. Additional treated surface water: The City could negotiate and obtain additional potable water supply from the South County Water Supply Program.

Inclusion of the above water supply options as well as implementation of the City's Water Shortage Contingency Plan would ensure that adequate water supplies are available to serve buildout of the General Plan. Therefore, projected water supplies would be sufficient to satisfy water demands associated with the proposed project while still meeting the current and projected water demands of existing customers within the service area. Impacts would be less than significant.

- 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?*

And,

- e) *Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

Less Than Significant Impact. The City of Manteca Solid Waste Division (SWD) provides solid waste hauling service for the City of Manteca and would serve the proposed project. The nearest landfill to the project site is approximately 6.8 miles to the northeast of the project site. Solid waste is collected by the City and deposited at the Forward Landfill. Recyclables are taken to a mini transfer station adjacent to the Forward Landfill where they are subsequently put into transfer trucks and hauled to Sacramento Recycling in Sacramento. According to Cal Recycle, the Forward Landfill has a closure date of 2053 and is currently operating at 50% capacity. The proposed project would be consistent with planned growth in the Manteca 2023 General Plan, in that it would be consistent with the type of development planned for this area in the Manteca 2023 General Plan. Therefore, the proposed project's waste generation has already been addressed in the Manteca 2023 General Plan EIR. Therefore, the capacity identified in the Manteca 2023 General Plan EIR, is more than sufficient to serve the proposed project. Because the Forward Landfill has adequate capacity for the construction and operation of the proposed project would have a less than significant impact.

The proposed project would not interfere with regulations related to solid waste or generate waste in excess of the capacity of local infrastructure. The proposed project would have a less than significant impact in this regard.

Cumulative Impacts

Utilities are generally provided or delivered on a local level but often originate from sources outside of the City as part of a regional distribution system. Similar to the project, other projects within the City would be required to adhere to the Standard Conditions of Approval related to water efficiency, utilities services and plans, and drainage. As shown above a cumulative analysis of water supply and demand was identified for multiple water years. With the inclusion of the additional water supply options and the City's Water Shortage Contingency Plan. Therefore, implementation of the project would not result in a cumulatively considerable contribution to impacts on water supply and wastewater, stormwater, or solid waste generation.

The coordination process associated with the preparation of development and infrastructure plans is intended to ensure that adequate resources are available to serve both individual projects and cumulative demand for resources and infrastructure as a result of cumulative growth and development in the area. Individual projects are subject to review for utility capacity to avoid unanticipated interruptions in service or inadequate supplies. Other planned projects are subject to connection and service fees to assist in facility expansion and service improvements triggered by an increase in demand. The proposed project would not result in incremental impacts to utilities or service systems, that taken in sum with past, present, and reasonably foreseeable projects, would not result in significant cumulative utility impacts.

5.20 WILDFIRE

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
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?			X	
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?			X	
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?			X	

a) *Substantially impair an adopted emergency response plan or emergency evacuation plan?*

Less Than Significant Impact. The project site is not located in or near a LRA or SRA, nor is the site designated as a VHFHSZ. Additionally, the project would comply with all local regulations related to emergency access/evacuation. As such, a less than significant impact would occur in this regard.

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?*

Less Than Significant Impact. The site is not on a relatively steep slope. Furthermore, the project site is not designated as a VHFHSZ. Therefore, a less than significant impact would occur.

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?*

Less Than Significant Impact. The project includes standard infrastructure, including roadways, utilities, and fire suppression systems. All of this infrastructure is designed to reduce the risk of fire. Following compliance with the established local and state regulatory framework discussed above, the project would not expose people or structures to a significant risk involving wildland fires and impacts would be less than significant in this regard.

- 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?*

Less Than Significant Impact. The project site is not in a VHFHSZ nor located near steep slopes or hillsides. The project would implement efficient landscape maintenance practices and design measures to decrease the release of stormwater running off the site; therefore, the proposed project site would not expose people to downstream flooding or landslides as a result of runoff. Impacts would be less than significant.

Cumulative Impacts

The proposed project area is not subject to natural wildfire areas. The project is not in or near a LRA or SRA, nor is the site designated as a VHFHSZ. The project would not impair any emergency plans. The project will require standard infrastructure following compliance with the established local and state regulatory framework to reduce the risk of fire. Lastly, the project would not expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes. Consequently, project implementation would not create a significant cumulative impact that would exacerbate wildfires. Impacts would be less than significant.

5.21 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE. Does the project:				
a) Have the potential to substantially 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?		X		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

a) *Have the potential to substantially 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?*

Less Than Significant With Mitigation Incorporated. This Initial Study includes an analysis of the project impacts associated with aesthetics, agricultural and forest resources, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, tribal cultural resources, and utilities and service systems. The analysis covers a broad spectrum of topics relative to the potential for the proposed project to have environmental impacts. This includes the potential for the proposed project to substantially 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. It was found that the proposed project would have either no impact, a less than significant impact, or a less than significant impact with the implementation of mitigation measures. For the reasons presented throughout this Initial Study, the proposed project would not substantially 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. With the implementation of mitigation measures presented in this Initial Study, the proposed project would have a less than significant impact relative to this topic. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

- 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)?*

Less Than Significant Impact. Per the criteria for evaluating environmental impacts in this Initial Study, the potential for adverse cumulative effects were considered in the response to each question in sections 1 through 21 of this checklist. In addition to project specific impacts, this evaluation considered the project's potential for incremental effects that are cumulatively considerable. As a result of this initial study, no cumulative effects associated with the proposed project have been identified. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

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

Less Than Significant Impact. Potential adverse project effects on human beings were discussed in Section 5.3, Air Quality; Section 5.7, Geology and Soils (seismic hazards); Section 5.9, Hazards and Hazardous Materials; Section 5.10, Hydrology and Water Quality (flooding); Section 5.17, Transportation (traffic hazards); and Section 5.20, Wildfire. For most aspects of these issues, no potential adverse effects on human beings were identified. Potential adverse effects that were identified would be reduced to levels considered less than significant through compliance with applicable laws, regulations, and City ordinances and standards, along with mitigation measures where necessary. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

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APPENDIX A
AIR QUALITY MODELING DATA

Potential To Emit Calculator for Gasoline Dispensing Facilities

11/12/2013

This sheet calculates the maximum fuel throughput, based on the number of vehicle refueling positions at your GDF. The calculations use fixed values for hours of operation, the time required for each refueling event, and the average amount of fuel dispensed per refueling event. The sheet then calculates the emissions of VOC from your GDF, based on emissions factors and the attainment status of your location. Note that while this calculator is designed primarily to address emissions of gasoline vapor, it includes algorithms to account for diesel fuel vapor as well and could even be used if the sole fuel dispensed was diesel.

HD truck diesel refueling positions	0				
Automotive dispensers with gasoline or diesel	12				
Automotive/Nonroad Diesel Refueling Positions	0				
Gasoline Vehicle Refueling Positions	12				
Location - Ozone Attainment Status	Nonattainment Area				
Max. Gasoline Throughput If No Automotive/Nonroad Diesel	8,199,360	gallons/year	Max. Automotive/Nonroad Diesel Throughput	210,240	gallons/year
Max. Combined Automotive plus HD Truck Diesel Throughput	210,240	gallons/year	Max. HD Truck Diesel	0	gallons/year
					22,464
					576

Internally fixed values in calculation -- gasoline and automotive/nonroad diesel

Average time between start of refueling events	0.25	hours
Number of hours of GDF operation per day	24	hours/day
Number of days per year open for business	365	days/year
Number of gallons per refueling event	10	gal/refueling event
Percent of refueling events which use automotive diesel dispensers	5	%/year

Internally fixed values -- HD truck diesel

Average time between start of refueling events	0.33	hours
Number of hours of GDF operation per day	24	hours/day
Number of days per year open for business	365	days/year
Number of gallons per refueling event	110	gal/refueling event

Gasoline VOC Emissions -- apply these values to GDFs using USTs or ASTs⁷

Description ⁴	VOC Emission factor (lb/1,000 gal)	Potential to Emit VOC (tons/yr)
Add'l Emissions for Small Volume GDFs ⁴	12.0	0.000
Storage Tank Filling ¹	0.30	1.230
Storage Tank Breathing Losses ²	0.25	1.025
Dispensing ³	0.29	1.189
Totals	0.840	3.444

48.991

Diesel VOC Emissions -- apply these values to GDFs using USTs or ASTs

Description ⁴	VOC Emission factor ⁵ (lb/1,000 gal)	Potential to Emit VOC (ton/yr)
Storage Tank Filling	0.040	0.004
Storage Tank Breathing Losses	0.028	0.003
Dispensing	0.040	0.004
Totals	0.108	0.011

Methodology

Maximum Throughput (gal/yr) = vehicle refueling positions / refueling event time (hrs) x hours of operation (hr/yr) x fuel dispensed (gal/refueling event)
 Potential to Emit of VOC (tons/yr) = Maximum Throughput (gal/yr) x VOC Emission Factor (lb/1,000 gal) x 1 ton/2,000 lbs

Notes:

Emission factors are from AP 42, Chapter 5.2, Transportation and Marketing of Petroleum Liquids, Table 5.2-7, (June 2008), except where noted.

¹ Assume Stage 1 controls are in place. 40 CFR 63, Subpart CCCCC requires that new or modified gasoline dispensing facilities with a monthly throughput greater than 100,000 gallons per month install Stage 1 vapor balance system that achieves a 90% emissions reduction.

² 40 CFR 63, Subpart CCCCC requires that new or modified gasoline dispensing facilities with a monthly throughput greater than 100,000 gallons per month install pressure/vacuum (PV) vent valves on the storage tank vent pipes. This model uses a 75 percent efficiency for PV valves in reducing breathing losses.

³ The displacement VOC emission rate in lbs/1000 gallons depends on the gasoline Reid Vapor Pressure, the dispensed fuel temperature, and the difference between the temperature of the fuel in the tank and the dispensed fuel. For these purposes EPA calculated the uncontrolled displacement VOC emission rate in lbs/1000 gallons. EPA has used 10 psi RVP and national average summer-time temperatures for ozone attainment areas. This yields a value of about 10.8 lbs/1000 gallons. EPA has used 7 psi RVP and temperatures representative of the summer-time western US for ozone non-attainment areas. This yields a value of about 7.5 lbs/1000 gallons. In 76 FR 41723, EPA determined that 80% of the vehicle fleet will have ORVR installed as of 2014, and widespread use will be achieved on a national basis on June 30, 2013. Therefore, this value has been reduced by 80% for 2014 and increases each year subsequent to 2014 as fleet turnover occurs.

See memorandum to Public Docket EPA-HQ-OAR-2010-1076, Updated Data for ORVR Widespread Use Assessment, Glenn Passavant, OTAQ, 2012 and U.S.EPA, Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures, EPA-457/B-12-001, August 7, 2012.

⁴ Even though spillage is a specific category of emissions related to fuel dispensing in AP-42, it is considered a fugitive emission for purposes of NSR permits and thus is not included here.

⁵ Diesel emission factors were derived using the no.2 diesel true vapor pressure and vapor molecular weight from AP-42 Table 7.1-2 at 70F and equation 1 of section 5.2.2 with an S factor value of 1.45 for storage tank and vehicle tank filling and an S factor of 1.0 for breathing losses.

⁶ GDFs with a gasoline throughput of < 10,000 gallons per month have higher storage tank filling and breathing loss emissions because they are not required to install Stage I vapor recovery controls under 40 CFR 63 CCCCC.

⁷ Using these values for an AST assumes a 45% average ullage in a 2000 gal AST

WoodSpring Manteca v5 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	WoodSpring Manteca v5
Construction Start Date	2/26/2024
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.40
Precipitation (days)	9.00
Location	37.781071608401746, -121.25000418516072
County	San Joaquin
City	Manteca
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2162
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
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Convenience Market with Gas Pumps	6.14	1000sqft	0.14	6,140	3,770	—	—	—
Strip Mall	58.0	1000sqft	1.33	58,000	8,535	—	—	—
Fast Food Restaurant with Drive Thru	13.9	1000sqft	0.32	13,900	35,612	—	—	—
Hotel	120	Room	0.60	104,979	16,114	—	—	—
Automobile Care Center	30.9	1000sqft	0.71	30,900	18,973	—	—	—
Parking Lot	604	Space	2.37	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.54	4.65	26.8	29.6	0.04	1.27	3.39	4.66	1.17	1.43	2.60	—	4,613	4,613	0.19	0.20	6.04	4,632
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.42	4.61	36.0	33.7	0.05	1.60	7.81	9.41	1.47	3.97	5.45	—	5,445	5,445	0.22	0.20	0.16	5,465
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.35	2.53	9.00	12.9	0.02	0.37	0.78	1.15	0.34	0.32	0.66	—	3,042	3,042	0.10	0.14	1.80	3,088

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.25	0.46	1.64	2.36	< 0.005	0.07	0.14	0.21	0.06	0.06	0.12	—	504	504	0.02	0.02	0.30	511

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	3.54	2.99	26.8	29.6	0.04	1.27	3.39	4.66	1.17	1.43	2.60	—	4,613	4,613	0.19	0.04	0.95	4,632
2025	1.99	4.65	12.8	19.6	0.03	0.47	1.08	1.55	0.44	0.26	0.70	—	4,416	4,416	0.16	0.20	6.04	4,486
2026	1.89	4.56	12.1	19.1	0.03	0.42	1.08	1.49	0.38	0.26	0.65	—	4,379	4,379	0.14	0.20	5.39	4,447
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	4.42	3.72	36.0	33.7	0.05	1.60	7.81	9.41	1.47	3.97	5.45	—	5,445	5,445	0.22	0.20	0.15	5,465
2025	1.96	4.61	13.0	18.6	0.03	0.47	1.08	1.55	0.44	0.26	0.70	—	4,331	4,331	0.14	0.20	0.16	4,394
2026	1.86	4.53	12.3	18.2	0.03	0.42	1.08	1.49	0.38	0.26	0.65	—	4,296	4,296	0.14	0.20	0.14	4,359
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.10	0.94	8.13	9.86	0.01	0.37	0.78	1.15	0.34	0.32	0.66	—	1,795	1,795	0.07	0.05	0.56	1,811
2025	1.35	2.53	9.00	12.9	0.02	0.33	0.73	1.06	0.31	0.18	0.49	—	3,042	3,042	0.10	0.14	1.80	3,088
2026	0.79	2.06	5.14	7.71	0.01	0.17	0.45	0.63	0.16	0.11	0.27	—	1,813	1,813	0.06	0.08	0.98	1,841
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.20	0.17	1.48	1.80	< 0.005	0.07	0.14	0.21	0.06	0.06	0.12	—	297	297	0.01	0.01	0.09	300
2025	0.25	0.46	1.64	2.36	< 0.005	0.06	0.13	0.19	0.06	0.03	0.09	—	504	504	0.02	0.02	0.30	511
2026	0.14	0.38	0.94	1.41	< 0.005	0.03	0.08	0.11	0.03	0.02	0.05	—	300	300	0.01	0.01	0.16	305

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	28.0	31.0	20.4	176	0.37	0.46	30.0	30.5	0.44	7.64	8.08	257	40,656	40,912	27.8	1.89	7,992	50,163
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	24.3	27.4	23.2	153	0.35	0.45	30.0	30.5	0.43	7.64	8.07	257	37,988	38,245	28.1	2.04	7,869	47,424
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	25.2	28.2	22.0	154	0.35	0.46	29.9	30.3	0.43	7.60	8.03	257	38,619	38,876	28.0	1.97	7,920	48,081
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.59	5.15	4.02	28.2	0.06	0.08	5.45	5.53	0.08	1.39	1.47	42.5	6,394	6,436	4.63	0.33	1,311	7,960

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	26.1	24.5	18.5	166	0.36	0.30	30.0	30.3	0.29	7.64	7.92	—	36,982	36,982	1.69	1.78	127	37,683
Area	1.65	6.39	0.08	9.30	< 0.005	0.02	—	0.02	0.01	—	0.01	—	38.3	38.3	< 0.005	< 0.005	—	38.4
Energy	0.21	0.10	1.88	1.58	0.01	0.14	—	0.14	0.14	—	0.14	—	3,607	3,607	0.42	0.03	—	3,627
Water	—	—	—	—	—	—	—	—	—	—	—	28.6	28.3	56.9	2.94	0.07	—	151
Waste	—	—	—	—	—	—	—	—	—	—	—	228	0.00	228	22.8	0.00	—	798

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7,865	7,865
Total	28.0	31.0	20.4	176	0.37	0.46	30.0	30.5	0.44	7.64	8.08	257	40,656	40,912	27.8	1.89	7,992	50,163
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	24.1	22.4	21.3	151	0.34	0.30	30.0	30.3	0.29	7.64	7.92	—	34,353	34,353	1.97	1.94	3.29	34,983
Area	—	4.87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.21	0.10	1.88	1.58	0.01	0.14	—	0.14	0.14	—	0.14	—	3,607	3,607	0.42	0.03	—	3,627
Water	—	—	—	—	—	—	—	—	—	—	—	28.6	28.3	56.9	2.94	0.07	—	151
Waste	—	—	—	—	—	—	—	—	—	—	—	228	0.00	228	22.8	0.00	—	798
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7,865	7,865
Total	24.3	27.4	23.2	153	0.35	0.45	30.0	30.5	0.43	7.64	8.07	257	37,988	38,245	28.1	2.04	7,869	47,424
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	24.1	22.5	20.1	148	0.34	0.30	29.9	30.2	0.29	7.60	7.88	—	34,965	34,965	1.83	1.87	54.8	35,621
Area	0.82	5.62	0.04	4.59	< 0.005	0.01	—	0.01	0.01	—	0.01	—	18.9	18.9	< 0.005	< 0.005	—	18.9
Energy	0.21	0.10	1.88	1.58	0.01	0.14	—	0.14	0.14	—	0.14	—	3,607	3,607	0.42	0.03	—	3,627
Water	—	—	—	—	—	—	—	—	—	—	—	28.6	28.3	56.9	2.94	0.07	—	151
Waste	—	—	—	—	—	—	—	—	—	—	—	228	0.00	228	22.8	0.00	—	798
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7,865	7,865
Total	25.2	28.2	22.0	154	0.35	0.46	29.9	30.3	0.43	7.60	8.03	257	38,619	38,876	28.0	1.97	7,920	48,081
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.40	4.10	3.67	27.0	0.06	0.06	5.45	5.51	0.05	1.39	1.44	—	5,789	5,789	0.30	0.31	9.07	5,898
Area	0.15	1.03	0.01	0.84	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.12	3.12	< 0.005	< 0.005	—	3.13
Energy	0.04	0.02	0.34	0.29	< 0.005	0.03	—	0.03	0.03	—	0.03	—	597	597	0.07	0.01	—	600
Water	—	—	—	—	—	—	—	—	—	—	—	4.73	4.69	9.42	0.49	0.01	—	25.0
Waste	—	—	—	—	—	—	—	—	—	—	—	37.8	0.00	37.8	3.77	0.00	—	132
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,302	1,302
Total	4.59	5.15	4.02	28.2	0.06	0.08	5.45	5.53	0.08	1.39	1.47	42.5	6,394	6,436	4.63	0.33	1,311	7,960

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.34	3.65	36.0	32.9	0.05	1.60	—	1.60	1.47	—	1.47	—	5,296	5,296	0.21	0.04	—	5,314
Dust From Material Movement:	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.48	1.35	< 0.005	0.07	—	0.07	0.06	—	0.06	—	218	218	0.01	< 0.005	—	218
Dust From Material Movement:	—	—	—	—	—	—	0.32	0.32	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.27	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	36.0	36.0	< 0.005	< 0.005	—	36.2

Dust From Material Movement:	—	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	0.79	0.00	0.00	0.15	0.15	0.00	0.03	0.03	—	149	149	0.01	0.01	0.02	152
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.30	6.30	< 0.005	< 0.005	0.01	6.39
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.04	1.04	< 0.005	< 0.005	< 0.005	1.06
Vendor	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	0.00
Hauling	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	0.00

3.3. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.42	2.87	26.7	28.1	0.04	1.27	—	1.27	1.17	—	1.17	—	4,377	4,377	0.18	0.04	—	4,392
Dust From Material Movement:	—	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.42	2.87	26.7	28.1	0.04	1.27	—	1.27	1.17	—	1.17	—	4,377	4,377	0.18	0.04	—	4,392
Dust From Material Movement:	—	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	0.21	1.98	2.08	< 0.005	0.09	—	0.09	0.09	—	0.09	—	324	324	0.01	< 0.005	—	325
Dust From Material Movement:	—	—	—	—	—	—	0.23	0.23	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.36	0.38	< 0.005	0.02	—	0.02	0.02	—	0.02	—	53.6	53.6	< 0.005	< 0.005	—	53.8

Dust From Material Movement:	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.08	1.42	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	236	236	0.01	0.01	0.95	240
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.10	1.12	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	213	213	0.01	0.01	0.02	216
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.2	16.2	< 0.005	< 0.005	0.03	16.4
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.68	2.68	< 0.005	< 0.005	0.01	2.72
Vendor	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	0.00
Hauling	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	0.00

3.5. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.44	1.20	11.2	13.1	0.02	0.50	—	0.50	0.46	—	0.46	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	2.02	2.36	< 0.005	0.09	—	0.09	0.08	—	0.08	—	432	432	0.02	< 0.005	—	433
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.37	0.43	< 0.005	0.02	—	0.02	0.02	—	0.02	—	71.5	71.5	< 0.005	< 0.005	—	71.7
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.33	0.33	3.61	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	686	686	0.04	0.03	0.08	696
Vendor	0.06	0.04	1.37	0.45	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	1,010	1,010	0.02	0.15	0.07	1,057

Hauling	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	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.05	0.67	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	127	127	0.01	0.01	0.24	129	
Vendor	0.01	0.01	0.24	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	182	182	< 0.005	0.03	0.21	190	
Hauling	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	0.00	
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.0	21.0	< 0.005	< 0.005	0.04	21.3	
Vendor	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.1	30.1	< 0.005	< 0.005	0.04	31.5	
Hauling	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	0.00	

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.96	0.80	7.46	9.31	0.02	0.31	—	0.31	0.28	—	0.28	—	1,713	1,713	0.07	0.01	—	1,719
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.36	1.70	< 0.005	0.06	—	0.06	0.05	—	0.05	—	284	284	0.01	< 0.005	—	285
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.34	0.23	4.19	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	743	743	0.04	0.03	2.76	755
Vendor	0.05	0.03	1.23	0.42	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	993	993	0.02	0.15	2.73	1,040
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.31	0.30	3.33	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	672	672	0.02	0.03	0.07	681
Vendor	0.05	0.03	1.32	0.43	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	993	993	0.02	0.15	0.07	1,038
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.24	0.22	0.18	2.43	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	492	492	0.01	0.02	0.85	499
Vendor	0.04	0.02	0.92	0.31	0.01	0.01	0.19	0.20	0.01	0.05	0.06	—	709	709	0.01	0.10	0.84	742
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.44	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	81.4	81.4	< 0.005	< 0.005	0.14	82.6
Vendor	0.01	< 0.005	0.17	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	117	117	< 0.005	0.02	0.14	123
Hauling	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	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	0.45	4.11	5.40	0.01	0.16	—	0.16	0.15	—	0.15	—	999	999	0.04	0.01	—	1,003
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.75	0.99	< 0.005	0.03	—	0.03	0.03	—	0.03	—	165	165	0.01	< 0.005	—	166
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.31	0.20	3.87	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	728	728	0.01	0.03	2.50	738
Vendor	0.05	0.03	1.18	0.40	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	975	975	0.02	0.15	2.39	1,021
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.26	3.06	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	658	658	0.02	0.03	0.06	667
Vendor	0.05	0.03	1.26	0.41	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	976	976	0.02	0.15	0.06	1,020
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.10	1.31	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	281	281	0.01	0.01	0.45	285
Vendor	0.02	0.01	0.51	0.17	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	406	406	0.01	0.06	0.43	425
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	46.5	46.5	< 0.005	< 0.005	0.07	47.2
Vendor	< 0.005	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	67.3	67.3	< 0.005	0.01	0.07	70.4
Hauling	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	0.00

3.11. Paving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.01	0.85	7.81	10.0	0.01	0.39	—	0.39	0.36	—	0.36	—	1,512	1,512	0.06	0.01	—	1,517
Paving	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	0.25	2.33	2.99	< 0.005	0.12	—	0.12	0.11	—	0.11	—	451	451	0.02	< 0.005	—	453
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.43	0.55	< 0.005	0.02	—	0.02	0.02	—	0.02	—	74.7	74.7	< 0.005	< 0.005	—	75.0
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.85	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	142	142	0.01	0.01	0.57	144
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.02	0.21	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	39.2	39.2	< 0.005	< 0.005	0.07	39.8
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.49	6.49	< 0.005	< 0.005	0.01	6.59
Vendor	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	0.00
Hauling	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	0.00

3.13. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	2.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	2.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.42	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	63.0	63.0	< 0.005	< 0.005	—	63.2
Architectural Coatings	—	1.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.4	10.4	< 0.005	< 0.005	—	10.5
Architectural Coatings	—	0.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.84	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	149	149	0.01	0.01	0.55	151
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.67	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	134	134	< 0.005	0.01	0.01	136
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.32	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	64.9	64.9	< 0.005	< 0.005	0.11	65.9

Vendor	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	0.00	0.00
Hauling	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	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.02	10.9	
Vendor	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	0.00	0.00
Hauling	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	0.00	0.00

3.15. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architect ural Coatings	—	2.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architect ural Coatings	—	2.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.40	0.53	< 0.005	0.01	—	0.01	0.01	—	0.01	—	63.0	63.0	< 0.005	< 0.005	—	63.2
Architectural Coatings	—	1.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.4	10.4	< 0.005	< 0.005	—	10.5
Architectural Coatings	—	0.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.77	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	146	146	< 0.005	0.01	0.50	148
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.61	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	132	132	< 0.005	0.01	0.01	133
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.30	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	63.6	63.6	< 0.005	< 0.005	0.10	64.5

Vendor	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	0.00	0.00
Hauling	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	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.5	10.5	< 0.005	< 0.005	0.02	10.7	
Vendor	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	0.00	
Hauling	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	0.00	

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	3.99	3.75	2.82	25.3	0.06	0.05	4.59	4.64	0.04	1.17	1.21	—	5,655	5,655	0.26	0.27	19.4	5,762
Strip Mall	5.68	5.34	4.02	36.0	0.08	0.07	6.54	6.61	0.06	1.66	1.73	—	8,053	8,053	0.37	0.39	27.6	8,205
Fast Food Restaurant with Drive Thru	9.43	8.85	6.67	59.8	0.13	0.11	10.9	11.0	0.10	2.76	2.86	—	13,362	13,362	0.61	0.64	45.8	13,616
Hotel	3.54	3.33	2.51	22.5	0.05	0.04	4.08	4.12	0.04	1.04	1.08	—	5,019	5,019	0.23	0.24	17.2	5,114

Automobile Care Center	3.45	3.24	2.44	21.9	0.05	0.04	3.97	4.01	0.04	1.01	1.05	—	4,893	4,893	0.22	0.24	16.8	4,986
Parking Lot	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	0.00
Total	26.1	24.5	18.5	166	0.36	0.30	30.0	30.3	0.29	7.64	7.92	—	36,982	36,982	1.69	1.78	127	37,683
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	3.69	3.42	3.26	23.1	0.05	0.05	4.59	4.64	0.04	1.17	1.21	—	5,253	5,253	0.30	0.30	0.50	5,349
Strip Mall	5.25	4.88	4.65	32.9	0.07	0.07	6.54	6.61	0.06	1.66	1.73	—	7,480	7,480	0.43	0.42	0.72	7,617
Fast Food Restaurant with Drive Thru	8.71	8.09	7.71	54.6	0.12	0.11	10.9	11.0	0.10	2.76	2.86	—	12,412	12,412	0.71	0.70	1.19	12,640
Hotel	3.27	3.04	2.90	20.5	0.05	0.04	4.08	4.12	0.04	1.04	1.08	—	4,662	4,662	0.27	0.26	0.45	4,748
Automobile Care Center	3.19	2.96	2.82	20.0	0.04	0.04	3.97	4.01	0.04	1.01	1.05	—	4,545	4,545	0.26	0.26	0.44	4,629
Parking Lot	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	0.00
Total	24.1	22.4	21.3	151	0.34	0.30	30.0	30.3	0.29	7.64	7.92	—	34,353	34,353	1.97	1.94	3.29	34,983
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	0.67	0.63	0.56	4.13	0.01	0.01	0.83	0.84	0.01	0.21	0.22	—	885	885	0.05	0.05	1.39	902
Strip Mall	0.96	0.89	0.80	5.89	0.01	0.01	1.19	1.20	0.01	0.30	0.31	—	1,260	1,260	0.07	0.07	1.97	1,284

Fast Food Restaurant with Drive Thru	1.59	1.48	1.32	9.77	0.02	0.02	1.97	1.99	0.02	0.50	0.52	—	2,092	2,092	0.11	0.11	3.28	2,131
Hotel	0.60	0.56	0.50	3.67	0.01	0.01	0.74	0.75	0.01	0.19	0.20	—	786	786	0.04	0.04	1.23	800
Automobile Care Center	0.58	0.54	0.48	3.58	0.01	0.01	0.72	0.73	0.01	0.18	0.19	—	766	766	0.04	0.04	1.20	780
Parking Lot	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	0.00
Total	4.40	4.10	3.67	27.0	0.06	0.06	5.45	5.51	0.05	1.39	1.44	—	5,789	5,789	0.30	0.31	9.07	5,898

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	176	176	0.03	< 0.005	—	177
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.05	0.01	—	285
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	312	312	0.05	0.01	—	315
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	360	360	0.06	0.01	—	363

Automob Care Center	—	—	—	—	—	—	—	—	—	—	—	—	178	178	0.03	< 0.005	—	180
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	50.5	50.5	0.01	< 0.005	—	51.0
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,359	1,359	0.22	0.03	—	1,372
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenie nce Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	176	176	0.03	< 0.005	—	177
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.05	0.01	—	285
Fast Food Restaurart with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	312	312	0.05	0.01	—	315
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	360	360	0.06	0.01	—	363
Automob ile Care Center	—	—	—	—	—	—	—	—	—	—	—	—	178	178	0.03	< 0.005	—	180
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	50.5	50.5	0.01	< 0.005	—	51.0
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,359	1,359	0.22	0.03	—	1,372
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenie nce Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	29.1	29.1	< 0.005	< 0.005	—	29.4
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	46.8	46.8	0.01	< 0.005	—	47.2

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	51.6	51.6	0.01	< 0.005	—	52.2
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	59.5	59.5	0.01	< 0.005	—	60.1
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	—	29.5	29.5	< 0.005	< 0.005	—	29.8
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	8.37	8.37	< 0.005	< 0.005	—	8.45
Total	—	—	—	—	—	—	—	—	—	—	—	—	225	225	0.04	< 0.005	—	227

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	59.5	59.5	0.01	< 0.005	—	59.7
Strip Mall	0.01	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	160	160	0.01	< 0.005	—	161
Fast Food Restaurant with Drive Thru	0.05	0.03	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	543	543	0.05	< 0.005	—	544
Hotel	0.10	0.05	0.90	0.76	0.01	0.07	—	0.07	0.07	—	0.07	—	1,075	1,075	0.10	< 0.005	—	1,078

Automobile Care Center	0.04	0.02	0.34	0.29	< 0.005	0.03	—	0.03	0.03	—	0.03	—	411	411	0.04	< 0.005	—	412
Parking Lot	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
Total	0.21	0.10	1.88	1.58	0.01	0.14	—	0.14	0.14	—	0.14	—	2,248	2,248	0.20	< 0.005	—	2,255
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	59.5	59.5	0.01	< 0.005	—	59.7
Strip Mall	0.01	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	160	160	0.01	< 0.005	—	161
Fast Food Restaurant with Drive Thru	0.05	0.03	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	543	543	0.05	< 0.005	—	544
Hotel	0.10	0.05	0.90	0.76	0.01	0.07	—	0.07	0.07	—	0.07	—	1,075	1,075	0.10	< 0.005	—	1,078
Automobile Care Center	0.04	0.02	0.34	0.29	< 0.005	0.03	—	0.03	0.03	—	0.03	—	411	411	0.04	< 0.005	—	412
Parking Lot	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
Total	0.21	0.10	1.88	1.58	0.01	0.14	—	0.14	0.14	—	0.14	—	2,248	2,248	0.20	< 0.005	—	2,255
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.85	9.85	< 0.005	< 0.005	—	9.88
Strip Mall	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26.5	26.5	< 0.005	< 0.005	—	26.6

Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	89.9	89.9	0.01	< 0.005	—	90.1
Hotel	0.02	0.01	0.16	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	178	178	0.02	< 0.005	—	179
Automobile Care Center	0.01	< 0.005	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	68.0	68.0	0.01	< 0.005	—	68.2
Parking Lot	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
Total	0.04	0.02	0.34	0.29	< 0.005	0.03	—	0.03	0.03	—	0.03	—	372	372	0.03	< 0.005	—	373

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	4.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.65	1.53	0.08	9.30	< 0.005	0.02	—	0.02	0.01	—	0.01	—	38.3	38.3	< 0.005	< 0.005	—	38.4
Total	1.65	6.39	0.08	9.30	< 0.005	0.02	—	0.02	0.01	—	0.01	—	38.3	38.3	< 0.005	< 0.005	—	38.4

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	4.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	4.87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.15	0.14	0.01	0.84	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.12	3.12	< 0.005	< 0.005	—	3.13
Total	0.15	1.03	0.01	0.84	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.12	3.12	< 0.005	< 0.005	—	3.13

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.87	0.88	1.75	0.09	< 0.005	—	4.63
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	8.23	7.94	16.2	0.85	0.02	—	43.3
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	8.08	8.17	16.3	0.83	0.02	—	42.9
Hotel	—	—	—	—	—	—	—	—	—	—	—	5.83	5.77	11.6	0.60	0.01	—	30.8
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	5.57	5.56	11.1	0.57	0.01	—	29.5
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	28.6	28.3	56.9	2.94	0.07	—	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.87	0.88	1.75	0.09	< 0.005	—	4.63
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	8.23	7.94	16.2	0.85	0.02	—	43.3
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	8.08	8.17	16.3	0.83	0.02	—	42.9
Hotel	—	—	—	—	—	—	—	—	—	—	—	5.83	5.77	11.6	0.60	0.01	—	30.8

Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	5.57	5.56	11.1	0.57	0.01	—	29.5
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	28.6	28.3	56.9	2.94	0.07	—	151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.14	0.15	0.29	0.01	< 0.005	—	0.77
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	1.36	1.32	2.68	0.14	< 0.005	—	7.17
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.34	1.35	2.69	0.14	< 0.005	—	7.11
Hotel	—	—	—	—	—	—	—	—	—	—	—	0.97	0.95	1.92	0.10	< 0.005	—	5.11
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	0.92	0.92	1.84	0.09	< 0.005	—	4.89
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	4.73	4.69	9.42	0.49	0.01	—	25.0

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	9.94	0.00	9.94	0.99	0.00	—	34.8
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	32.8	0.00	32.8	3.28	0.00	—	115
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	86.3	0.00	86.3	8.62	0.00	—	302
Hotel	—	—	—	—	—	—	—	—	—	—	—	35.4	0.00	35.4	3.54	0.00	—	124
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	63.6	0.00	63.6	6.36	0.00	—	223
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	228	0.00	228	22.8	0.00	—	798
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	9.94	0.00	9.94	0.99	0.00	—	34.8
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	32.8	0.00	32.8	3.28	0.00	—	115
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	86.3	0.00	86.3	8.62	0.00	—	302

Hotel	—	—	—	—	—	—	—	—	—	—	—	35.4	0.00	35.4	3.54	0.00	—	124
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	63.6	0.00	63.6	6.36	0.00	—	223
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	228	0.00	228	22.8	0.00	—	798
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	1.65	0.00	1.65	0.16	0.00	—	5.76
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	5.43	0.00	5.43	0.54	0.00	—	19.0
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.3	0.00	14.3	1.43	0.00	—	50.0
Hotel	—	—	—	—	—	—	—	—	—	—	—	5.86	0.00	5.86	0.59	0.00	—	20.5
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	10.5	0.00	10.5	1.05	0.00	—	36.8
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	37.8	0.00	37.8	3.77	0.00	—	132

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,273	1,273
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.36	0.36
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.7	21.7
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	164	164
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6,406	6,406
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7,865	7,865
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,273	1,273
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.36	0.36
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.7	21.7

Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	164	164
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6,406	6,406
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7,865	7,865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	211	211
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06	0.06
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.60	3.60
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27.2	27.2
Automobile Care Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,061	1,061
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,302	1,302

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
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Site Preparation	Site Preparation	3/4/2024	3/22/2024	5.00	15.0	—
Grading	Grading	3/25/2024	4/30/2024	5.00	27.0	—
Building Construction	Building Construction	10/1/2024	8/1/2026	5.00	479	—
Paving	Paving	5/1/2024	9/30/2024	5.00	109	—
Architectural Coating	Architectural Coating	5/5/2025	8/29/2026	5.00	345	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	3.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.9	LDA,LDT1,LDT2
Site Preparation	Vendor	—	9.10	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	25.0	11.9	LDA,LDT1,LDT2
Grading	Vendor	—	9.10	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.9	LDA,LDT1,LDT2
Paving	Vendor	—	9.10	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.3	11.9	LDA,LDT1,LDT2
Building Construction	Vendor	35.1	9.10	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	16.1	11.9	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	9.10	HHDT,MHDT

Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	320,879	106,960	6,194

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	22.5	0.00	—
Grading	0.00	0.00	54.0	0.00	—
Paving	0.00	0.00	0.00	0.00	2.37

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Convenience Market with Gas Pumps	0.00	0%
Strip Mall	0.00	0%
Fast Food Restaurant with Drive Thru	0.00	0%
Hotel	0.00	0%
Automobile Care Center	0.00	0%
Parking Lot	2.37	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Convenience Market with Gas Pumps	990	990	990	361,499	6,449	6,449	6,449	2,353,714
Strip Mall	1,410	1,410	1,410	514,775	9,183	9,183	9,183	3,351,689
Fast Food Restaurant with Drive Thru	2,340	2,340	2,340	854,190	15,237	15,237	15,237	5,561,613
Hotel	879	879	879	320,835	5,723	5,723	5,723	2,088,949

Automobile Care Center	857	857	857	312,805	5,580	5,580	5,580	2,036,666
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	320,879	106,960	6,194

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Convenience Market with Gas Pumps	314,471	204	0.0330	0.0040	185,659
Strip Mall	505,300	204	0.0330	0.0040	500,285

Fast Food Restaurant with Drive Thru	558,135	204	0.0330	0.0040	1,693,727
Hotel	643,317	204	0.0330	0.0040	3,354,813
Automobile Care Center	319,196	204	0.0330	0.0040	1,281,071
Parking Lot	90,436	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Convenience Market with Gas Pumps	454,805	52,916
Strip Mall	4,296,206	119,798
Fast Food Restaurant with Drive Thru	4,219,119	499,852
Hotel	3,044,012	226,177
Automobile Care Center	2,907,106	266,306
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Convenience Market with Gas Pumps	18.5	—
Strip Mall	60.9	—
Fast Food Restaurant with Drive Thru	160	—
Hotel	65.7	—
Automobile Care Center	118	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Convenience Market with Gas Pumps	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Convenience Market with Gas Pumps	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Hotel	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Hotel	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Hotel	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Automobile Care Center	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Automobile Care Center	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
----------------	-----------	-------------	----------------	---------------	------------	-------------

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
----------------	-----------	----------------	---------------	----------------	------------	-------------

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)
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5.17. User Defined

Equipment Type	Fuel Type
----------------	-----------

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
-----------	--------	------------------------------	------------------------------

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	22.3	annual days of extreme heat
Extreme Precipitation	1.50	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento–San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
----------------	----------------	-------------------	-------------------------	---------------------

Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	59.7
AQ-PM	54.7
AQ-DPM	72.6
Drinking Water	99.0
Lead Risk Housing	11.8
Pesticides	94.2
Toxic Releases	43.0
Traffic	62.5
Effect Indicators	—
CleanUp Sites	81.4
Groundwater	59.6
Haz Waste Facilities/Generators	78.4
Impaired Water Bodies	0.00
Solid Waste	86.5
Sensitive Population	—
Asthma	83.6
Cardio-vascular	91.0
Low Birth Weights	28.4
Socioeconomic Factor Indicators	—

Education	42.3
Housing	15.1
Linguistic	34.6
Poverty	22.5
Unemployment	36.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	56.89721545
Employed	56.93571154
Median HI	74.2846144
Education	—
Bachelor's or higher	33.29911459
High school enrollment	100
Preschool enrollment	58.59104324
Transportation	—
Auto Access	88.68215065
Active commuting	17.60554344
Social	—
2-parent households	95.0468369
Voting	64.72475298
Neighborhood	—
Alcohol availability	93.5711536
Park access	81.35506224
Retail density	23.46978057

Supermarket access	19.32503529
Tree canopy	48.95418966
Housing	—
Homeownership	70.64031823
Housing habitability	66.84203773
Low-inc homeowner severe housing cost burden	56.25561401
Low-inc renter severe housing cost burden	47.45284229
Uncrowded housing	40.20274605
Health Outcomes	—
Insured adults	85.66662389
Arthritis	71.8
Asthma ER Admissions	14.4
High Blood Pressure	56.0
Cancer (excluding skin)	68.9
Asthma	37.3
Coronary Heart Disease	83.6
Chronic Obstructive Pulmonary Disease	59.8
Diagnosed Diabetes	76.6
Life Expectancy at Birth	39.0
Cognitively Disabled	43.0
Physically Disabled	93.4
Heart Attack ER Admissions	7.2
Mental Health Not Good	43.4
Chronic Kidney Disease	85.5
Obesity	38.6
Pedestrian Injuries	19.6
Physical Health Not Good	57.2

Stroke	80.6
Health Risk Behaviors	—
Binge Drinking	21.6
Current Smoker	35.6
No Leisure Time for Physical Activity	47.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	31.0
Elderly	87.4
English Speaking	63.7
Foreign-born	34.9
Outdoor Workers	27.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	55.7
Traffic Density	68.1
Traffic Access	0.0
Other Indices	—
Hardship	51.8
Other Decision Support	—
2016 Voting	53.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	73.0
Healthy Places Index Score for Project Location (b)	66.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes

Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
 b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Per Site Plan
Construction: Construction Phases	Per Construction Questionnaire
Construction: Off-Road Equipment	Cut and Fill recycled on-site
Operations: Vehicle Data	Adjusted Trip Rate per Transportation Analysis
Construction: Off-Road Equipment EF	No changes

Model Output: OFFROAD2021 (v1.0.4) Emissions Inventory

Region Type: County

Region: Riverside

Calendar Year: 2025

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Yr	Vehicle Category	Model Year	Horsepower Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consumptio	Total_Activ	Total_Population	Horsepower_Hours_hphy	
Riverside	2025	Industrial - Forklifts	Aggregate	Aggregate	Diesel	0.00594317	0.00719123	0.00855816	0.08997174	0.06280993	13.81764	0.00325883	0.002998	0.000127899	0.000113066	449443.3188	480845.1	620.7546599	43034057.66	
						g/hph														
						2024	HC	ROG	TOG	CO	Nox	CO2	PM10	PM2_5	Sox	NH3	Fuel_gphr			
							0.045730047	0.055333357	0.065851267	0.692292685	0.483294584	106.32064	0.025075214	0.0230692	0.000984126	0.000869991	3458267.135			
			<u>Project Forklifts</u>	13																
			HP	89																
			Hours per Day	12																
			Days per Year	365																
			1 pound =	453.5924 grams																
			Emissions Source	ROG	NOX	CO	SO2	PM10	PM2.5	CO2	metric tons/yr	PM10 tons/yr								
			<u>Phase 1 Forklift Emissions</u>	1.68	14.64	20.98	0.03	0.76	0.70	0	0	0.139								

Based on emission rates obtained from CARB OFFROAD Version 1.0.3.

Number of forklifts per SCAQMD High Cube Warehouse Truck Trip Study White Paper Summary of Business Survey Results, June 2014.

Model Output: OFFROAD2021 (v1.0.4) Emissions Inventory

Region Type: County

Region: Riverside

Calendar Year: 2025

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Yr	Vehicle Category	Model Year	Horsepower	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consumption	Total_Activ	Total_Population	Horsepower_Hours_hhpy
Riverside	2025	Airport Ground Support - Cargo Loader	Aggregate	Aggregate	Diesel	1.84344E-05	2.23056E-05	2.65455E-05	0.00046	0.000227	0.083499	7.88103E-06	7.25055E-06	7.7341E-07	6.8325E-07	2715.958568	1337.043	2.801092909	156615.0266
Riverside	2025	Airport Ground Support - Cargo Tractor	Aggregate	Aggregate	Diesel	3.12004E-05	3.77525E-05	4.49286E-05	0.00036	0.000313	0.06813	1.74102E-05	1.60174E-05	6.30572E-07	5.57491E-07	2216.059673	1256.26	1.857409202	118257.7724
Riverside	2025	Airport Ground Support - Misc - Cargo Tractor	Aggregate	Aggregate	Gasoline	0.000682887	0.000628119	0.000751475	0.064055	0.003471	0.828233	5.77464E-05	4.36306E-05	6.83798E-06	1.23444E-05	35237.1	6898.5	5.06	655357.5

g/hph

	HC	ROG	TOG	CO	Nox	CO2	PM10	PM2.5	Sox	NH3	Fuel gphr
2023	0.038975445	0.047160289	0.056124641	0.9732985	0.4790538	176.54063	0.016662705	0.015329689	0.001635206	0.001444581	5742296.562
	0.087362752	0.105708929	0.125802362	1.0079949	0.8768078	190.76852	0.048749517	0.044849556	0.001765634	0.001561004	6205083.964
	0.345037458	0.317365454	0.379692675	32.364656	1.7539458	418.47577	0.029177137	0.022044948	0.003454978	0.006237164	17804008.42
	HC	ROG	TOG	CO	Nox	CO2	PM10	PM2.5	Sox	NH3	Fuel gphr
2023	0.109173844	0.132100351	0.157210335	2.7262995	1.3418741	494.50671	0.046673785	0.042939882	0.004580363	0.004046407	16084706.18
	0.162268379	0.196344738	0.233666465	1.872259	1.6285909	354.33521	0.090547802	0.083303978	0.003279505	0.002899424	11525380.05
	1.745889536	1.605869195	1.921244935	163.76516	8.8749656	2117.4874	0.147636313	0.111547437	0.017482189	0.031560051	90088282.61
	2.017331759	1.934314285	2.3121121736	168.36372	11.845431	2966.3293	0.28848579	0.237791297	0.025342057	0.038505881	117698368.8
	0.207576408	0.199034199	0.237900269	17.32404	1.2188535	305.22495	0.029310885	0.024467896	0.002607609	0.003962121	121110752

Project Yard Trucks

2

HP	190
Hours per Day	12
Days per Year	365
1 pound =	453.5924 grams

Emissions Source	ROG	NOX	CO	SO2	PM10	PM2.5	CO2	MT/yr	PM10 tons/yr
Phase 1 Yard Trucks	2.00	12.25	174.16	0.03	0.29	0.25	3068.45	508.02	0.054

Based on aggregated emission rates obtained from CARB OFFROAD Version 1.0.1.

Number of yard trucks/hostlers per SCAQMD High Cube Warehouse Truck Trip Study White Paper Summary of Business Survey Results, June 2014.

Emergency Backup Generator Emissions

	Fuel Type	Quantity	HP	LF	Hours/Year per Unit	Hours per Day	HP-hr per day	Total hp-hr per year			
Standard Generator	Diesel	2	750	0.74	50	1	1,500	75,000			
	HC	ROG	TOG	CO	NO_x	CO₂	PM₁₀	PM_{2.5}	PM	SO_x	
Emissions Rates (g/hp-hr)	0.14	1.0205827	1.1249089	2.6	2.85	521.63114	0.15	0.15	0.15	0.00494	
Pounds/Day	0.46	3.38	3.72	8.60	9.42	1725.00	0.50	0.50	0.50	0.02	
Tons/Year	0.01	0.08	0.09	0.21	0.24	43.12	0.01	0.01	0.01	0.00	
Metric tons/year						39.12					

Source: Emissions rates from CalEEMod Guide Appenix D, Table 12.1

APPENDIX B
TRAFFIC IMPACT STUDY

Traffic Impact Study

Airport Atherton Manteca, California



February 6, 2024

Traffic Impact Study

Airport Atherton Development

City of Manteca, California

February 6, 2024



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EXECUTIVE SUMMARY

This report summarizes the results of a Transportation Impact Study (TIS) that was conducted for the proposed Airport Atherton mixed-use development (Project) to be located immediately northeast of the intersection of Airport Way and West Atherton Drive in the City of Manteca (City), California.

This TIS was conducted consistent with State and City of Manteca guidelines and standards. This document was prepared in accordance with best professional practices and standards that assess the impacts of a proposed development on the transportation system, and as appropriate, recommends improvements to lessen or negate those impacts. Transportation analyses, as presented in this TIS, involve the evaluation of existing and anticipated future roadway conditions, including with and without the proposed development, and recommend transportation improvements to offset both the impacts of the increase in future traffic volumes and the changes in traffic operations due to the development.

Project Overview

The Project is anticipated to consist of a 12-fueling position gas station with a convenience store, approximately 13,900 square feet (SF) of restaurant uses, 58,000 SF of retail space, a 120-room hotel, and a 30,900 SF new car dealership. The site is located at 1460 South Airport Way and can be identified with the following assessor's parcel number (APN): 226-160-21. The site is approximately 18.4 acres, is zoned and is designated in the City's General Plan as "General Commercial" (GC).

The purpose of this TIS is to evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed Project. The report includes a vehicle miles travelled (VMT) analysis, intersection level of service (LOS) capacity analyses of key intersections, and evaluations and recommendations concerning project site access, on-site circulation, and connectivity for vehicles, bicycles, transit, and pedestrians.

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed Project, seven study intersections were identified with input from City staff (three existing study intersections and four future intersections) and were evaluated during the weekday morning (a.m.) peak hour and weekday afternoon (p.m.) peak hour under four study scenarios. In accordance with City of Manteca Traffic Impact Analysis Guidelines, the study intersections were evaluated under:

- Existing 2023 Conditions;
- Existing 2023 plus Project Conditions;
- Cumulative 2040 Conditions; and
- Cumulative 2040 plus Project Conditions.

Project Trips

Using the methodology presented in the Institute of Transportation Engineers' (ITE) Trip Generation Manual 11th Edition (TGM), the proposed development is expected to generate approximately 14,980 vehicular trips during a typical weekday, including 1,024 a.m. peak hour trips (546 inbound, 478 outbound) and 1,119 p.m. peak hour trips (558 inbound, 561 outbound). When considering the application of internal capture and pass-by trip reductions, the proposed development is expected to generate approximately 6,477 net new external vehicular trips during a typical weekday, including 512 a.m. peak hour trips (283 inbound, 229 outbound) and 425 p.m. peak hour trips (206 inbound, 220 outbound).

Vehicle Miles Traveled

The City of Manteca has not established local standards pertaining to thresholds of significance for VMT impacts of proposed developments. As a result, guidance from the Governor's Office of Planning and Research's (OPR) *Technical Advisory on Evaluating Transportation Impacts* (published in December 2018) was used to determine VMT significance of the proposed Project. The following OPR Advisory guidelines were used for the VMT assessment:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis.
- OPR states that by adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Generally, retail development, including stores smaller than 50,000 square feet, might be considered local serving.
- OPR recommends that where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.
- Lead agencies have the discretion to set or apply their own significance thresholds.

Retail less than 50,000 square feet (Restaurants, General Retail, and Gas Station/Convenience Store Combination)

The OPR Advisory provides for a general threshold of 50,000 square feet per establishment as an indicator as to whether a retail store can be considered local-serving or not. As the restaurant, general retail, and gas station/convenience store combination land uses of the proposed project are all under 50,000 square feet per establishment, the VMT related impacts from these land uses would be **less than significant**.

Hotel

The development of a new typical hotel near a cluster of existing hotels located near a local destination or attraction can be presumed to reduce trip lengths. Essentially, a trip to a hotel is expected to occur due to

someone planning to travel to Manteca, or the immediate area, but the proximity of the hotel to the surrounding attractions would drive the length of that trip and the resultant impact to the overall transportation system. Most often this means that the impact to the transportation system would be negligible or reduced by the introduction of a new hotel to an area where people are already traveling to and planning on staying in unless the hotel significantly affects the local supply of rooms or introduces a significant new attraction. As demonstrated by the *Initial Study / Mitigated Negative Declaration* of the nearby The Crossings development, the proposed hotel would be in regional proximity to other existing hotels. As such, the proposed hotel would not significantly affect the local supply of rooms, and thus would have **less than significant** impacts on VMT related impacts.

Automobile Dealership

The proposed automobile dealership would accommodate an existing automobile dealership in Manteca that is seeking to move to a new location. The proposed automobile dealership would constitute as an infill development since it is not adding a new dealership to Manteca. Since this development is not building a completely new dealership, but instead merely moving a dealership to another location, the result would be no net increase in VMT. Thus, the proposed automobile dealership would not result in a net increase in VMT and would result in VMT-related impacts that are **less than significant**.

Level of Service

Existing 2023 Conditions

Under this scenario, all but one of the study intersections operate at LOS D or better during both peak hours. The intersection of W. Atherton Drive at Airport Way (Study Intersection 1) operates at LOS E in the p.m. peak hour.

Existing 2023 plus Project Conditions

Under this scenario, all but two of the study intersections operate at LOS D or better during both peak hours. The intersection of W. Atherton Drive at Airport Way (Study Intersection 1) operates at LOS F during both peak hours, while the intersection of Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2) operates at LOS F in the a.m. peak hour.

Cumulative 2040 Conditions

Under this scenario, all study intersections would operate at LOS D or better during both peak hours. The scenario assumes that the intersection of W. Atherton Drive at Airport Way (Study Intersection 1) is signalized as a mitigation measure to a planned development directly northwest of the intersection, and that Airport Way is widened to four lanes (two lanes in each direction) from the current two lanes.

Cumulative 2040 plus Project Conditions

Under this scenario, all but two study intersections would operate at LOS D or better during both peak hours. The study intersections of W. Atherton Drive at Airport Way (Study Intersection 1) and Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2) both operate at LOS F during the a.m. peak hour.

Suggested Improvements

The intersections of W. Atherton Drive at Airport Way (Study Intersection 1), Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2), and Sparrowhawk Street at W. Atherton Drive (Study Intersection 3) were analyzed to identify changes that could improve operations to an acceptable LOS or at the direction of City of Manteca staff. (Intersections 4 and 5 were also affected as a result of changes at Intersection 1.) The changes are listed below. All mitigations required for 2040 plus Project Conditions were also analyzed for 2023 plus Project Conditions, as it is expected they will be required as conditions of approval for the project:

- **Study Intersection 1**
 - Signalize the intersection (to be completed by others);
 - Restripe the eastbound approach to include two dedicated left-turn lanes, one through lane, and one through-right lane;
 - Widen the westbound approach to include one left-turn lane, two through lanes, and one right-turn only lane, with a permitted-overlap phase with the southbound left movement;
 - Restripe the dedicated northbound right-turn lane to a through-right lane;
 - Adjust signal timing to optimize green times for each movement.
- **Study Intersection 2**
 - Restripe the northbound approach to include a right-turn only lane;
 - Install raised medians and channelizing island;
 - Provide an eastbound left-turn lane into the project driveway;
 - Provide an eastbound acceleration lane for left-turns out of the project driveway.
- **Study Intersection 3**
 - Signalize the intersection;
 - Protect eastbound and westbound left-turn movements.
- **Study Intersection 4:**
 - Widen Airport Way to two lanes in each direction (related to widening at Intersection 1)
- **Study Intersection 5:**
 - Widen W. Atherton Drive (related to widening at Intersection 1)

Additional Transportation Analyses

Pedestrian Impacts

The proposed Project would not result in any conflicts with applicable or adopted policies, plans, or programs related to pedestrian facilities. The proposed Project would not decrease the performance or safety of existing pedestrian facilities. Pedestrian access to the site would continue to be **adequate** with the proposed Project.

Bicycle Impacts

The proposed Project would not result in any conflicts or inconsistencies with existing bicycle facilities or with adopted bicycle system plans, policies, or programs related to bicycle facilities. The proposed Project would not decrease the performance or safety of bicycle facilities. Bicycle access to the site would continue to be **adequate** with the proposed Project.

Transit Impacts

The proposed Project would not conflict with existing or planned transit facilities, nor is it expected to create inconsistencies between additional transit trips and adequate levels of pedestrian and bicycle facilities along transit routes and at transit stops. Transit access would continue to be **adequate** with the proposed Project.

On-Site Circulation

Circulation on the project site is via drive aisles with perpendicular parking on both sides, and no dead-end aisles. The quick serve restaurant has two drive-through lanes; both of which are approximately 12 feet wide. The site can be accessed and traversed by delivery and garbage trucks. Trash enclosures are placed in locations easily accessed by garbage trucks. Pedestrian access and circulation are provided via marked crosswalks connecting each use to the new sidewalk along W. Atherton Drive and Airport Way, although there are no marked paths between buildings. On-site circulation is considered **adequate**.

Off-street Parking

The proposed Project would provide 668 spaces, which is 53 spaces more than the required minimum of 615 spaces. As all minimum parking standards are met, TJKM concludes that the number of off-street parking spaces to be provided by the proposed Project is **adequate**.

1.0 INTRODUCTION

This report summarizes the results of a Transportation Impact Study (TIS) that was conducted for a proposed mixed-use development (Project) to be located immediately northeast of the intersection of Airport Way and West Atherton Drive in the City of Manteca (City), California. The Project is anticipated to consist of a 12-fueling position gas station with a convenience store, approximately 13,900 square feet (SF) of restaurant uses, 58,000 SF of retail space, a 120-room hotel, and a 30,900 SF new car dealership.

This chapter discusses the TIS purpose, the Project study area, and the scenarios analyzed. **Figure 1** shows the Project study area and the Project site location. **Figure 2** shows the Project's site plan, dated November 16, 2023.

1.1 Study Purpose

The purpose of this report is to provide summaries of changes in vehicle miles traveled (VMT) and traffic impacts on the surrounding roadway network as a result of the proposed Project. The City of Manteca has not formally adopted VMT standards yet, so the Governor's Office of Planning and Research (OPR) Technical Advisory guidance (December 2018) was used for VMT significance analysis. A level of service (LOS) analysis was conducted to determine the proposed Project's impacts on the surrounding roadway network and consistency with the City of Manteca's guidelines and standards.

1.2 Study Area

TJKM evaluated traffic conditions at seven study intersections (three existing intersections and four future intersections) during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected based on TJKM's working knowledge of the area and with input and approval from City of Manteca staff. Six of the seven intersections will provide primary access to/from the intersection.

Traffic counts were collected at the existing three study intersections on May 25, 2023. The peak periods observed were between 7 and 9 a.m. and between 4 and 6 p.m.

The study intersections and their corresponding existing traffic controls are listed below:

- Study Intersection 1: W. Atherton Drive at Airport Way (All-Way Stop Control [AWSC]);
- Study Intersection 2: Sage Sparrow Avenue at W. Atherton Drive (One-Way Stop Control; OWSC);
- Study Intersection 3: Sparrowhawk Street at W. Atherton Drive (OWSC);
- Study Intersection 4: Airport Way at Airport Driveway (OWSC);
- Study Intersection 5: W. Atherton Drive at W. Atherton Driveway West (OWSC);
- Study Intersection 6: W. Atherton Drive at W. Atherton Driveway Central (OWSC); and
- Study Intersection 7: W. Atherton Drive at W. Atherton Driveway East (OWSC).

Note that Study Intersections 4 through 7 are right-in-right-out driveways proposed as part of the Project and do not currently exist.

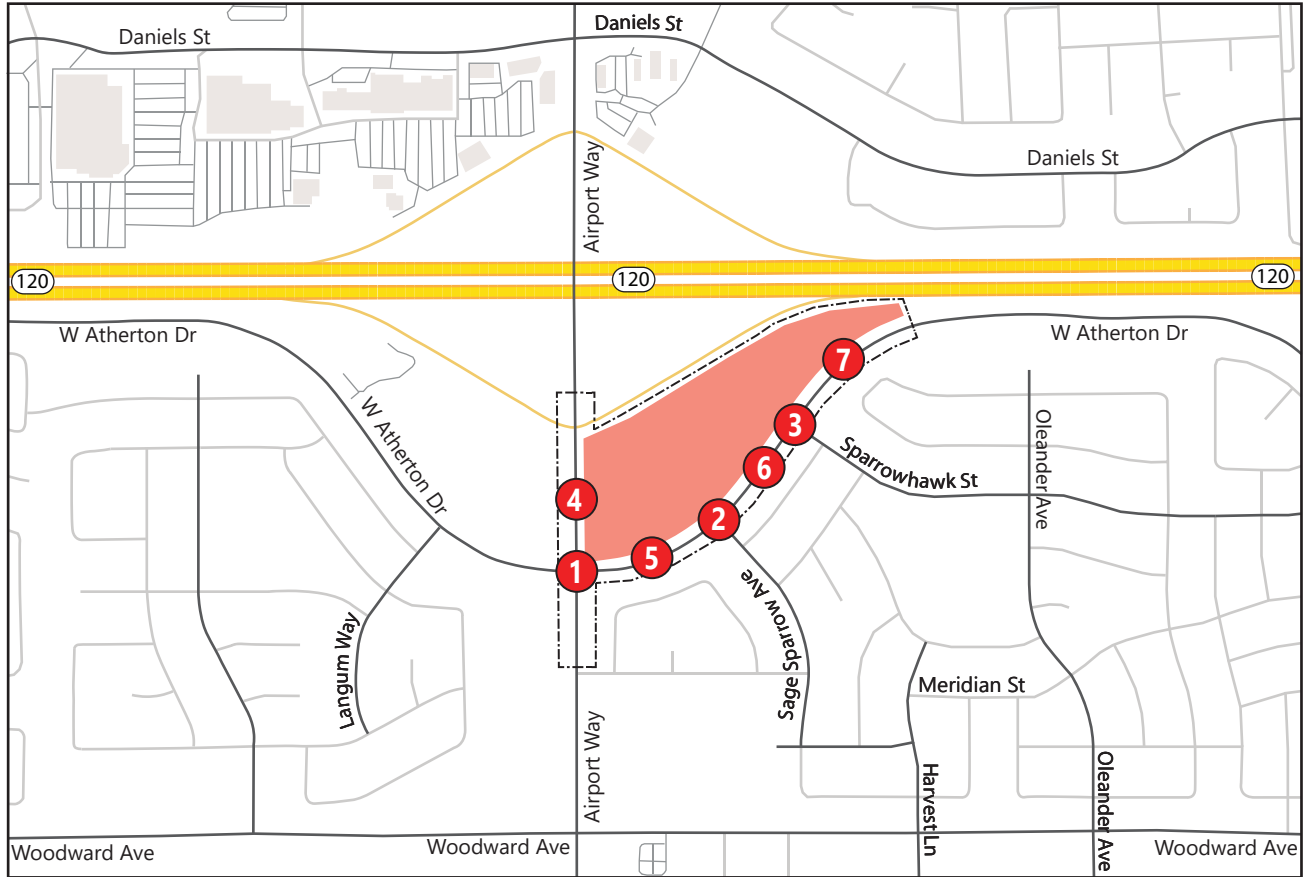
Figure 1 shows the location of the study intersections.

1.3 Study Scenarios

The roadway network operations within the Project study area were analyzed under the following scenarios:

1. **Existing 2023 Conditions** – This scenario evaluates the study locations based on existing traffic volumes, lane geometry, and traffic controls.
2. **Existing 2023 plus Project Conditions** – This scenario is identical to Existing 2023 Conditions but with the addition of traffic from the proposed Project.
3. **Cumulative 2040 Conditions** – This scenario considers the development of the City and surrounding communities to the year 2040, projecting existing 2023 traffic volumes to the year 2040 using a compounding annual growth rate for a.m. and p.m. peak hours. A growth rate of 2.178 percent was derived from the San Joaquin Council of Governments (SJCOG) travel demand model. The horizon year of 2040 was used for consistency with the *2040 General Plan*, which is currently in the process of being adopted by the City.
4. **Cumulative 2040 plus Project Conditions** – This scenario is identical to Cumulative 2040 Conditions but with the addition of traffic from the proposed Project.

Figure 1: Vicinity Map



LEGEND

■ Project Site

⊗ Study Intersection



Figure 2: Site Plan



2.0 STUDY METHODOLOGY

Traffic impacts related to the proposed Project were evaluated for both compliance with applicable regulatory documents and environmental significance as defined in the California Environmental Quality Act (CEQA). In accordance with the *Technical Advisory* published by OPR, a quantitative VMT assessment forms the basis of the CEQA analysis for the proposed Project. Effective as of July 1, 2020, intersection LOS can no longer be used to determine significant impacts for CEQA purposes. However, the CEQA guidelines do not exclude the use of LOS analyses when determining consistency with plans and standards for jurisdictions or agencies, such as with the City of Manteca.

2.1 Vehicle Miles Traveled Methodology

This study includes a quantitative analysis of VMT generated by the proposed project. California Senate Bill (SB) No. 743 is intended to reduce greenhouse gas emissions and particulates, to encourage infill development and a diversity of uses instead of sprawl, and to promote multi-modal transportation networks. The City of Manteca has not formally adopted VMT standards yet. As a result, the OPR *Technical Advisory on Evaluating Transportation Impacts* (December 2018) was used for guidance in determining VMT significance. The OPR guidelines state that for analysis purposes, "VMT" refers to automobile VMT, specifically passenger vehicles and light trucks. Heavy truck traffic is typically excluded.

2.1.1 VMT Screening Criteria

The OPR guidelines include the following screening criteria for identifying projects that can be presumed to have a less-than-significant impact:

- Within a Transit Priority Area, depending on applicability;
- Within a designated low VMT area; or
- Local Serving Projects.

Local serving projects include K-1 public schools, local parks, day care centers, retail less than 50,000 square feet, non-destination hotels, student housing, assembly uses, community institutions, local serving community colleges, affordable or supportive housing, assisted living facilities, senior housing, or projects generally generating less than 110 daily vehicle trips.

Based on the above criteria, this project is not screened out, and thus requires a full VMT analysis.

2.1.2 VMT Standards

The State of California provides lead agencies latitude in adopting standards of significance for evaluating VMT impacts associated with land use projects. As mentioned previously, the City has not established VMT thresholds, so the OPR guidance was followed. OPR mentions the following thresholds for various types of projects:

- Threshold 1: Residential Projects

- Residential projects exceeding a level of 15 percent below the existing VMT per capita may indicate a significant transportation impact.
- Threshold 2: Office Projects
 - Commercial projects exceeding a level of 15 percent below existing regional VMT per employee may indicate a significant transportation impact.
- Threshold 3: Retail Projects
 - Retail projects that show a net increase in total VMT may indicate a significant transportation impact.

The OPR Advisory additionally lists the following guidance regarding implementation of the VMT metric:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis.
- OPR states that by adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Generally, retail development, including stores smaller than 50,000 square feet, might be considered local serving.
- OPR recommends that where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.
- Lead agencies have the discretion to set or apply their own significance thresholds.

2.1.3 VMT ASSESSMENT

TJKM's VMT assessment of the proposed Airport-Atherton development is as follows:

Retail less than 50,000 square feet (Restaurants, General Retail, and Gas Station/Convenience Store Combination)

The OPR Advisory specifically addresses some of the key issues surrounding how a local-serving retail store should be evaluated in terms of its VMT impact. As described, the threshold for significance for retail uses is "a net increase." This means that if a proposed retail use results in additional VMT, it would result in a finding of significance.

Local-serving retail primarily serves pre-existing needs (i.e., it does not generate new trips because it meets existing demand). Therefore, local-serving retail uses can be presumed to reduce trip lengths when a new store is proposed. Essentially, the assumption is that someone who already travels to a similar store will travel to a newly constructed local-serving store because of its closer proximity. The proposed retail store would not be fulfilling an unmet need and would not be generating new trips. As a result, trips on the

roadway network become shorter. Conversely, residential and office land uses often drive new trips, given that they introduce new participants to the transportation system.

The OPR Advisory provides for a general threshold of 50,000 square feet per establishment as an indicator as to whether a retail store can be considered local-serving or not. As the restaurant, general retail, and gas station/convenience store combination land uses of the proposed project are all under 50,000 square feet per establishment, the VMT related impacts from these land uses would be **less than significant**.

Hotel

Similar to retail land uses, typical hotels such as that proposed by the project most often serve pre-existing needs when their client base is staying at the hotel not because of the amenities, but because of the area surrounding the hotel. Alternatively, destination hotels do not serve pre-existing needs as they offer special amenities that are not offered elsewhere, and guests typically spend the majority of their time on the destination hotel property. The Great Wolf Lodge Manteca, which is connected to the Great Wolf Lodge Water Park, is an example of a destination hotel.

The hotel component of the proposed project would be a typical hotel and it is likely that guests are choosing the hotel because they are traveling to Manteca for a variety of reasons, such as business in the area, visiting family and friends, attending baseball tournaments at Big League Dreams Manteca, or visiting Great Wolf Lodge Water Park.

The development of a new typical hotel near a cluster of existing hotels located near a local destination or attraction can be presumed to reduce trip lengths. Essentially, a trip to a hotel is expected to occur due to someone planning to travel to Manteca, or the immediate area, but the proximity of the hotel to the surrounding attractions would drive the length of that trip and the resultant impact to the overall transportation system. Most often this means that the impact to the transportation system would be negligible or reduced by the introduction of a new hotel to an area where people are already traveling to and planning on staying in unless the hotel significantly affects the local supply of rooms or introduces a significant new attraction. As demonstrated by the *Initial Study / Mitigated Negative Declaration* of the nearby The Crossings development, the proposed hotel would be in regional proximity to other existing hotels. As such, the proposed hotel would not significantly affect the local supply of rooms, and thus would have **less than significant** impacts on VMT related impacts.

Automobile Dealership

The proposed automobile dealership would accommodate an existing automobile dealership in Manteca that is seeking to move to a new location. The proposed automobile dealership would constitute as an infill development since it is not adding a new dealership to Manteca. Since this development is not building a completely new dealership, but instead merely moving a dealership to another location, the result would be no net increase in VMT. Thus, the proposed automobile dealership would not result in a net increase in VMT and would result in VMT-related impacts that are **less than significant**.

2.2 Level of Service Methodology

Level of Service (LOS) is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the free-flow operating conditions and F representing the severely congested flow with high delays. Typically, LOS C is considered as an ideal condition as it represents stable flow and efficient use of the transportation facility. Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets. The following sections provide detailed study methodology based on the type of intersections.

Each of the study intersections was analyzed using *Synchro*, Version 11, software using methodology outlined in the Transportation Research Board's (TRB) Highway Capacity Manual, 6th Edition (HCM 6). The LOS assessment under all scenarios is based on current traffic controls unless otherwise noted. HCM 6 methodology was used for consistency with agency standard requirements as described in Section 2.2.3.

2.2.1 Signalized Intersections

The study intersections under traffic signal control are analyzed using the HCM 6 methodology described in Chapter 19. This methodology determines LOS based on average control delay per vehicle for the overall intersection and by approach and a combination of control delay per vehicle and volume-to-capacity (v/c) for lane groups during the peak hour operating conditions.

Delay quantifies the increase in travel time due to traffic signal control; it is also a surrogate measure of driver discomfort and fuel consumption. The v/c ratio quantifies the degree to which a phase's capacity is utilized by a lane group. A v/c ratio of 1.0 or more indicates cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 seconds per vehicle represents failure from a delay perspective).

Table 1 summarizes the relationship between the control delay and LOS for signalized intersections. The LOS assessments under all scenarios are based on current traffic controls and signal timings unless otherwise noted.

The LOS methodology for signalized intersections is described in detail in **Appendix A**.

Table 1: Level of Service Definitions for Signalized Intersections

LOS	Definition	Control Delay	
		Range (s/veh)	v/c Range
A	Very low control delay. This level is typically assigned when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is short. Most vehicles arrive during the green phase. Many vehicles do not stop at all.	≤ 10	≤ 1.0
B	The v/c ratio is low. There is good progression, short cycle lengths, or both. More vehicles stop, causing higher levels of delay.	≤ 20	≤ 1.0
C	Higher delays occur in favorable progression or a due to a moderate cycle length, or both. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during a given cycle) may begin to appear. The number of vehicles stopping is still considered low-to-moderate, though many vehicles still pass through the intersection without stopping.	≤ 35	≤ 1.0
D	The influence of congestion becomes more apparent. Longer delays may result from some combination of a high v/c ratio, ineffective progression, long cycle length, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	≤ 55	≤ 1.0
E	Typically considered the limit of acceptable delay. High delays usually indicate a very high v/c ratio, poor progression, long cycle lengths, and high volumes. Most cycles fail to clear the queue.	≤ 80	≤ 1.0
F	Delays are unacceptable to most drivers. Conditions are considered oversaturated. Arrival flow rates exceed the capacity of the intersection (v/c in excess of 1.0). Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.	> 80	> 1.0

Source: Transportation Research Board's (TRB) *Highway Capacity Manual, 6th Edition*

2.2.2 Stop-Controlled Intersections

The study intersections under one/two-way stop control (OWSC / TWSC) and all-way stop control (AWSC) are analyzed using the HCM 6 methodology described in Chapters 20 and 21, respectively. LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At one- or two-way stop-controlled intersections, the control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The weighted average delay for the entire intersections is presented for all-way stop controlled intersections.

Table 2 summarizes the relationship between delay and LOS for stop-controlled intersections. The delay ranges for stop-controlled intersections are lower than for signalized intersections, as drivers expect less delay at stop-controlled intersections.

The LOS methodology for stop-controlled intersections is described in detail in **Appendix A**.

Table 2: Level of Service Definitions for Stop Controlled Intersections

LOS	Definition	Control Delay Range (s/veh)	v/c Range
A	Usually no conflicting traffic. Drivers can easily find gaps in traffic to maneuver. v/c is low.	≤ 10	≤ 1.0
B	Occasionally some delay due to conflicting traffic. Drivers can find gaps in traffic. v/c is low.	≤ 15	≤ 1.0
C	There is some noticeable delay due to conflicting traffic. Drivers are still able to find gaps in traffic.	≤ 25	≤ 1.0
D	Drivers experience delay due to less gaps in traffic to maneuver. Lane group v/c creeps closer to 1.0.	≤ 35	≤ 1.0
E	Delay approaches driver tolerance levels. Drivers will occasionally find gaps in traffic to maneuver. Lane group v/c approaches 1.0.	≤ 50	≤ 1.0
F	Delay exceed driver tolerance levels or v/c exceeds 1.0 or both.	> 50	> 1.0

Source: Transportation Research Board's (TRB) *Highway Capacity Manual, 6th Edition*

2.2.3 Level of Service Standards

Although level of service is no longer used for identifying impacts under CEQA, level of service analysis is still used for determining consistency with adopted agency plans and standards. Where standards refer to significant environmental impacts, this analysis instead identifies these as substantial inconsistencies with adopted plans.

The City of Manteca discusses their specific standards in the Circulation Element within the *Manteca General Plan 2023* (adopted April 5, 2011) as specified on Page 4-11 (Policy C-P-2) and provides further clarification in their *Draft Transportation Impact Analysis Guidelines* on Pages 7 and 8.

General Plan: *"To the extent feasible, the City shall strive for a vehicular LOS of D or better on all streets and intersections, except in the Downtown area where right-of-way is limited, pedestrian, bicycle, and transit mobility are most important and vehicular LOS is not a consideration."*

TIA Guidelines: *"[For intersections] that operate at acceptable LOS without the project... an impact is defined if the project causes the LOS on a study facility to change from an acceptable LOS under "No Project" conditions to unacceptable LOS under "With Project Conditions..."*

[For intersection that operate at unacceptable LOS without the project, a Project is said to have an impact if:]

- *The addition of project traffic increases the average vehicle delay for a signalized intersection by five seconds or more, or*
- *The addition of project traffic increases the average delay for an all-way stop controlled intersection by five seconds or more and the intersection meets the one hour peak hour signal warrant, or*
- *The addition of project traffic increases the highest delayed side-street movement for a side-street stop-controlled intersection by five seconds or more and the intersection meets the one hour peak hour signal warrant.*

Given the above, the applicable LOS standard is LOS D or better. Further, delays should generally not increase by more than five seconds on average per intersection or for the highest delayed side-street in the case of OWSC or TWSC if the intersection is already operating at LOS E or F.

2.3 Multimodal Assessment Methodology

Under CEQA, a significant impact occurs if the project conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Multimodal standard thresholds are primarily discussed in the City's *Draft Transportation Impact Analysis Guidelines*:

Transit Facilities *A project is defined to have a significant impact to the transit system if implementation of the project would:*

- *Eliminate existing or planned transit service.*
- *Remove an existing bus stop.*
- *Cause a substantial rerouting of existing or planned bus service.*

Bicycle Facilities *A project is defined to have a significant impact to the bicycle facilities if implementation of the project would:*

- *Eliminate existing or planned bike paths, lanes, or routes.*
- *Result in an unsafe condition for bicycles, including but not limited to, unsafe bicycle/vehicle or bicycle/pedestrian conflicts or bicycle facility pavement degradation.*

Pedestrian Facilities *A project is defined to have a significant impact to the pedestrian facilities if implementation of the project would:*

- *Eliminate existing or planned pedestrian facilities.*
- *Degrade existing or planned pedestrian facilities. Examples of degradation include, but are not limited to, reduction of sidewalk/path width to less than the standards shown in the City's standard plans, removal of a crosswalk, or removal of a landscape buffer.*

- *Create a highly circuitous pedestrian circulation pattern that would discourage walking to local destinations or transit facilities.*
- *Result in unsafe conditions for pedestrians, including unsafe bicycle/pedestrian or pedestrian/motor vehicle conflicts.*

3.0 EXISTING 2023 CONDITIONS

This section describes existing conditions in the immediate Project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersections.

3.1 Existing Setting and Roadway System

The updated site plan shows five driveways along W. Atherton Drive and one right-in/right-out access point on Airport Way. Airport Way is a two-lane arterial road that passes through residential and agricultural uses, with bike lanes on each side. It is planned to be a four-lane facility, with the exception of the portion between Yosemite Avenue and Daniels Drive which is planned to be a six-lane facility.

Manteca Transit Route 4 loop service runs along Airport Way from W. Woodward Avenue connecting Manteca Transit Center on Main Street. The closest bus stop is located near the intersection of Airport Way and Peregrine Street within a quarter-mile of the Project site. W. Atherton Drive is a four-lane collector road that runs generally east-west, south of SR 120. There is a Class I bike path parallel to W. Atherton Drive and a Class II bike lane along Airport Way south of W. Atherton Drive designated in the City of Manteca's *2003 Bicycle Master Plan*. The roadway currently has concrete sidewalks on the south side of the roadway where a single-family residential development is located. Marked crosswalks currently exist at the intersection of W. Atherton Drive and Airport Way. No other marked crosswalks are available in the vicinity of the project.

Figure 1 illustrates the study intersections and the vicinity map of the proposed project. Existing pedestrian, bike, and transit facilities are shown **Figure 3**, **Figure 4**, and **Figure 5**, respectively.

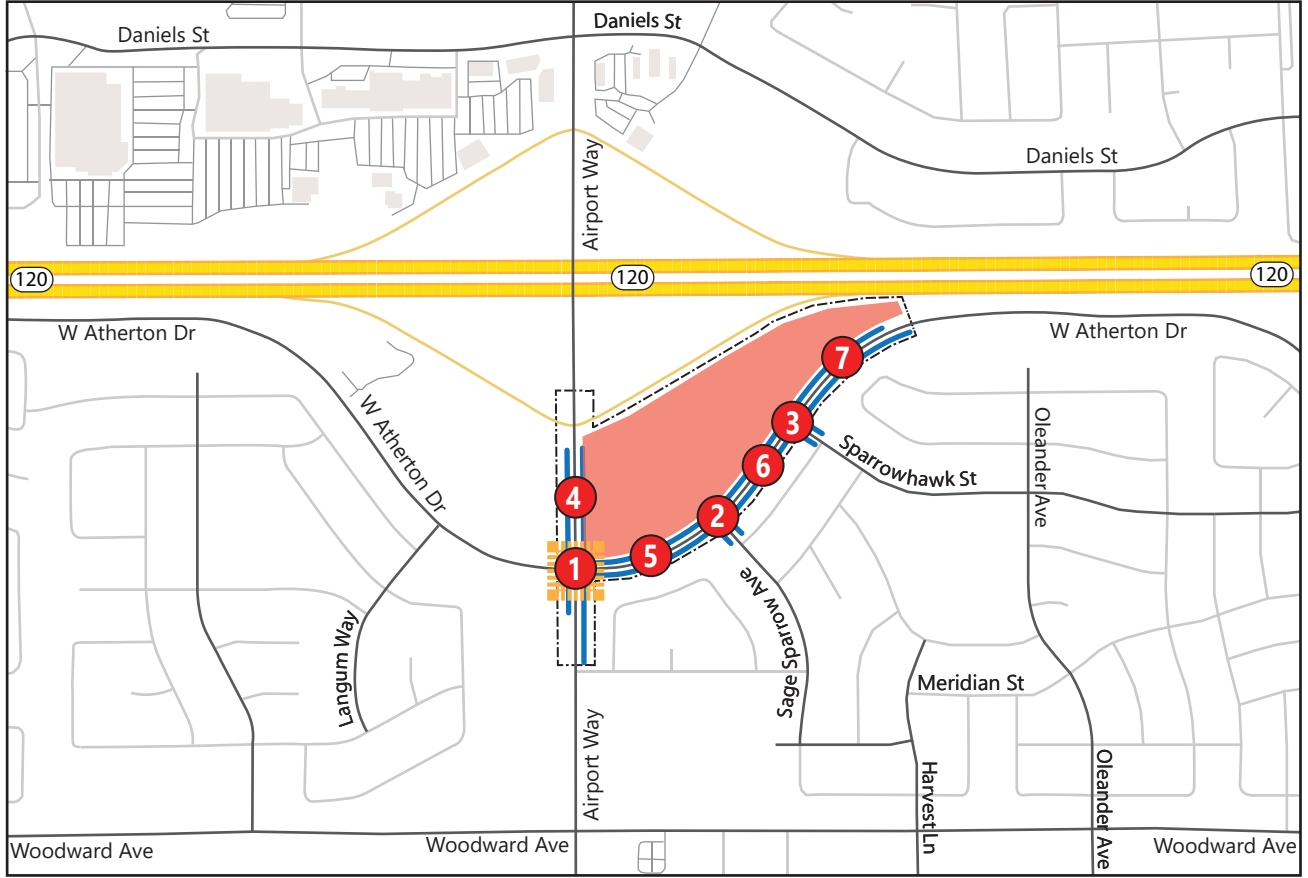
3.2 Existing Traffic Volumes and Lane Configuration

In order to determine the weekday morning (a.m.) and the weekday afternoon (p.m.) peak hour turning movement traffic volumes, intersection turning movement counts (TMC) of vehicles, bicycles, and pedestrians were collected at the study intersections on Thursday, May 25, 2023 during the weekday morning and weekday afternoon peak periods (7 – 9 a.m. and 4 – 6 p.m., respectively).

The raw turning movement count data are included in **Appendix B**.

The existing lane geometries and traffic control at each study intersection are illustrated on **Figure 6**, and the peak hour intersection turning movement volumes at each study intersection are illustrated on **Figure 7**.

Figure 3: Existing Pedestrian Facilities

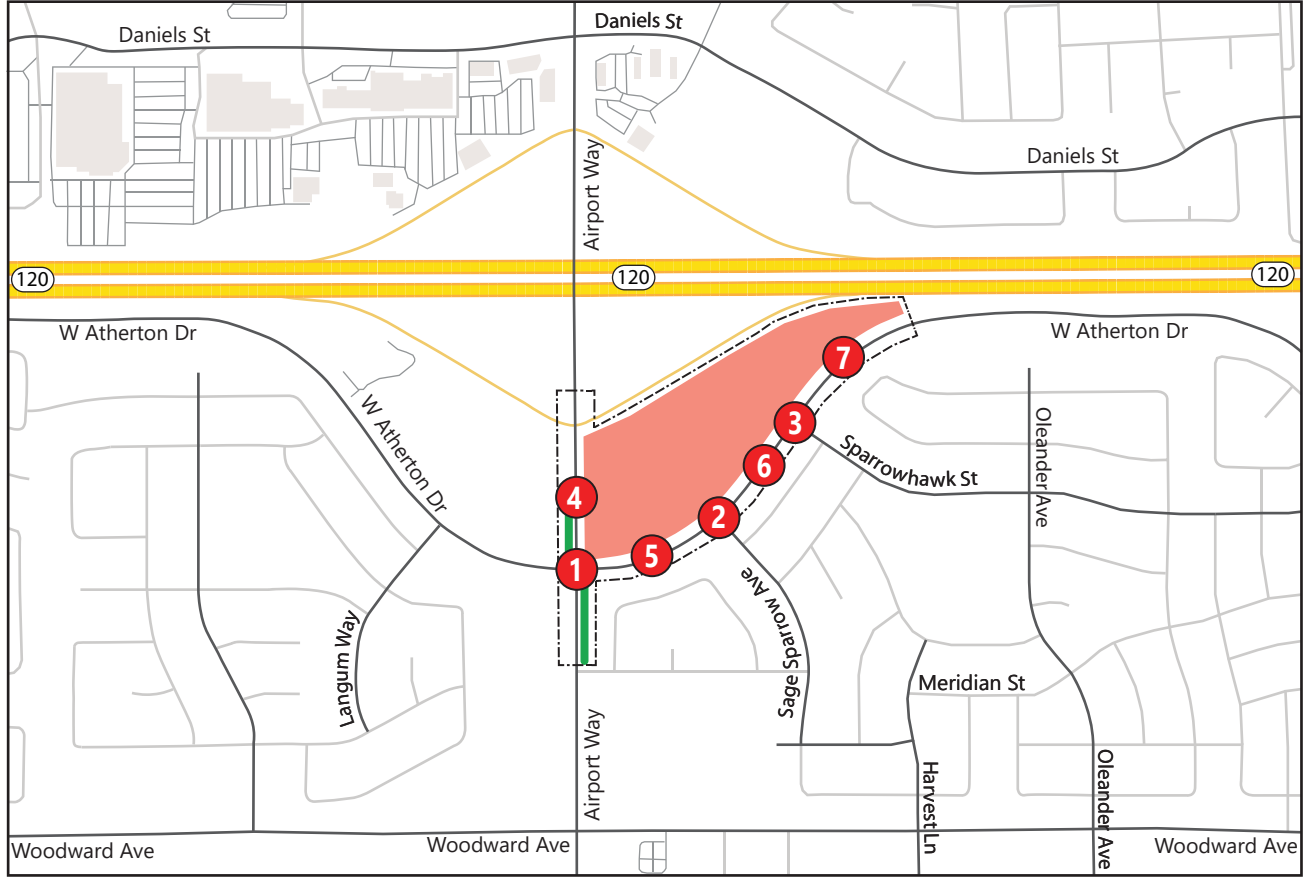


LEGEND

- Project Site
- x Study Intersection
- Concrete Sidewalk
- Marked Crosswalk



Figure 4: Existing Bicycle Facilities

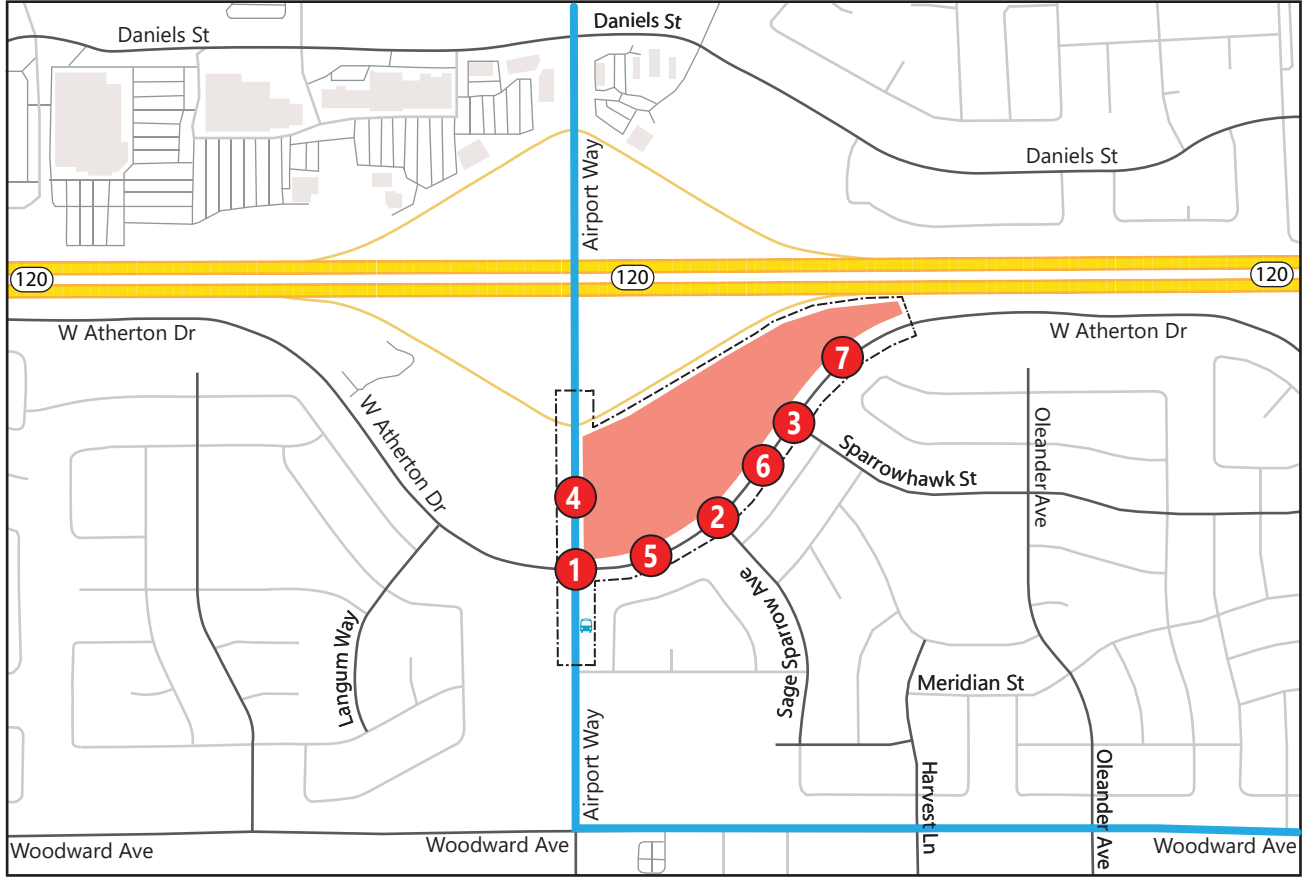


LEGEND

- Project Site
- x Study Intersection
- Class II Bike Lane



Figure 5: Existing Transit Facilities

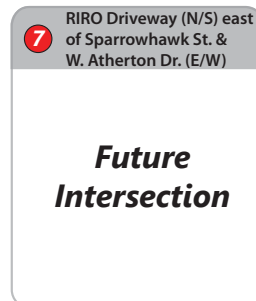
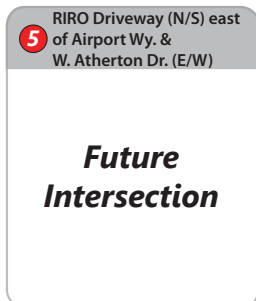
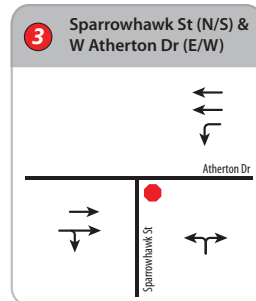
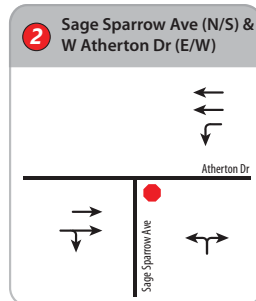
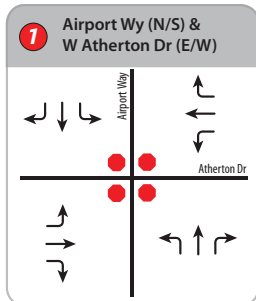
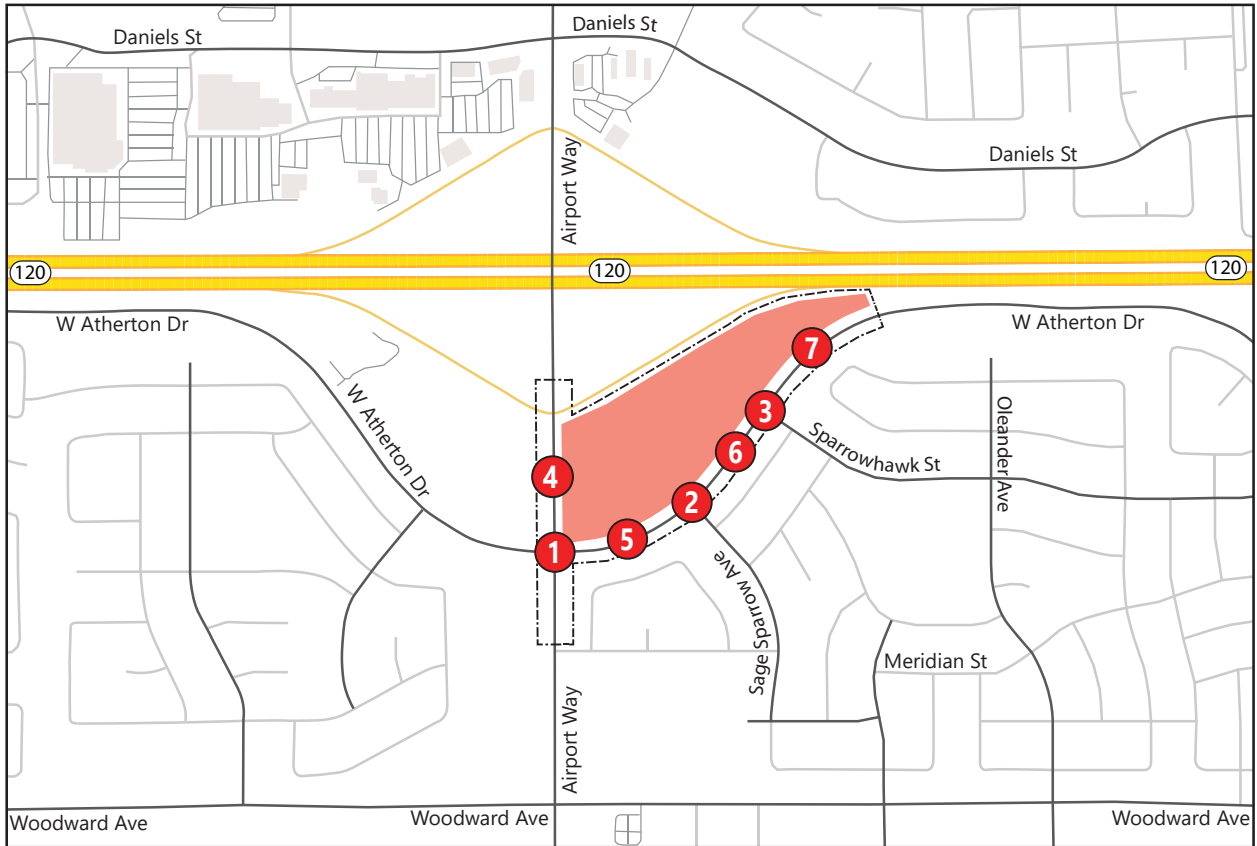


LEGEND

- Project Site
- x Study Intersection
- Route 4
- 🚌 Bus Stop



Figure 6: Existing Lane Configuration



LEGEND

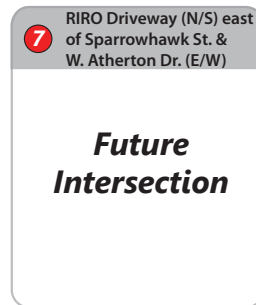
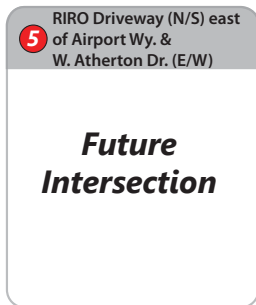
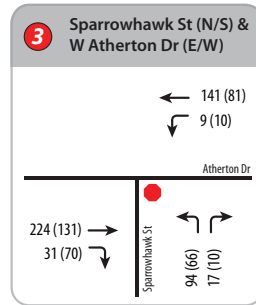
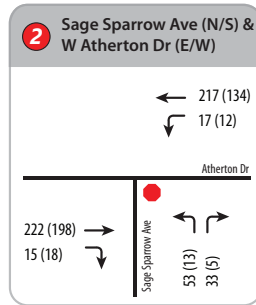
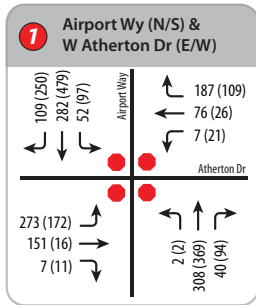
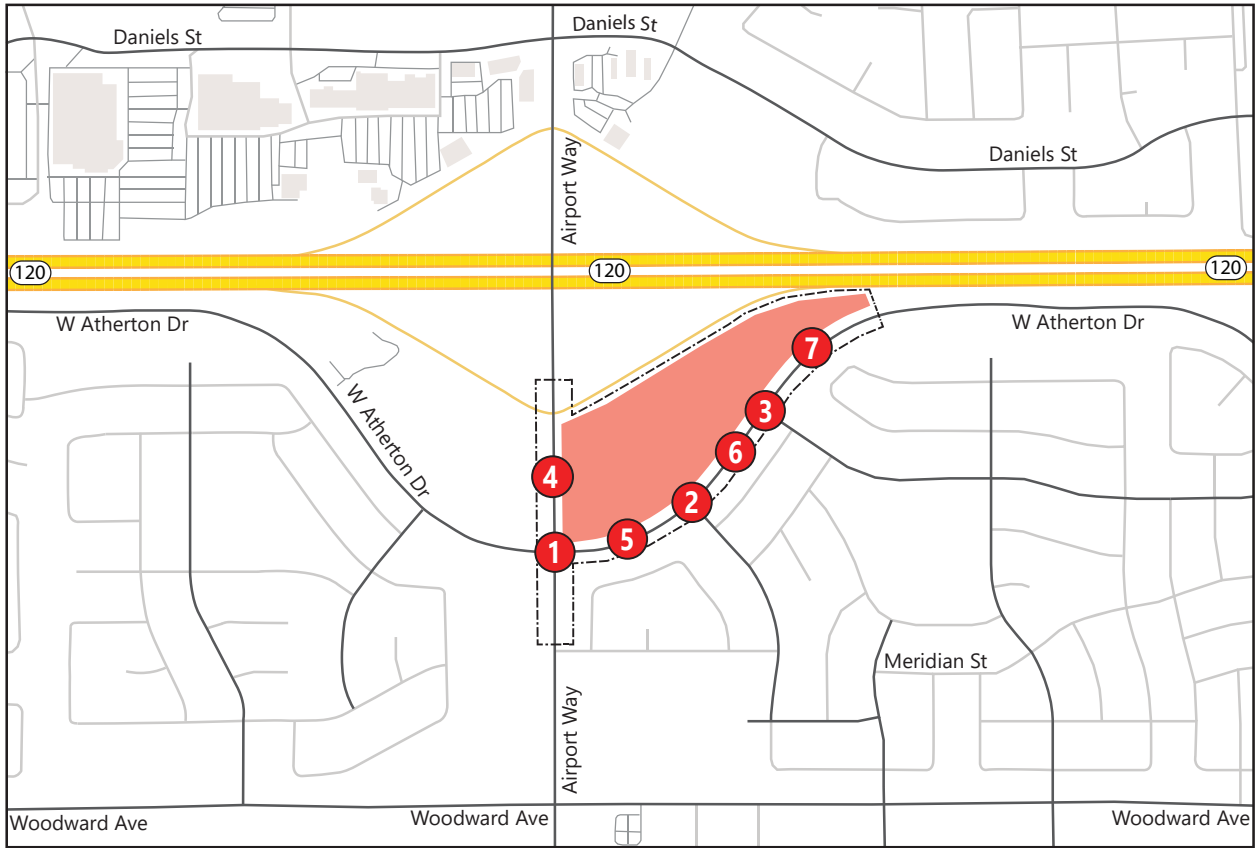
■ Project Site

⊗ Study Intersection

● Stop Sign



Figure 7: Existing 2023 Volumes



LEGEND

■ Project Site

● Stop Sign

⊗ Study Intersection

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes



3.3 Intersection Level of Service Analysis

Existing intersection lane configurations and turning movement volumes were used to calculate the level of service for the study intersections during each peak hour. Existing signal timings were obtained from the City. The results of the level of service analysis for Existing 2023 Conditions are summarized in **Table 3**. Intersections that operated at unacceptable LOS are shown in red. Detailed calculation sheets for the Existing Conditions scenario are contained in **Appendix C**.

As illustrated in the table below, all but one of the study intersections operate at LOS D or better during both peak hours. The intersection of W. Atherton Drive and Airport Way (Study Intersection 1) operates at LOS E in the p.m. peak hour. No signal warrants are satisfied.

Table 3: Existing Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type ⁽¹⁾	Peak Hour ⁽²⁾	Existing Conditions		Signal Warrants Satisfied?
				Delay ⁽³⁾ (sec/veh)	LOS ⁽⁴⁾	
1	W. Atherton Dr. & Airport Way	AWSC	a.m.	32.6	D	No
			p.m.	44.3	E	No
2	Sage Sparrow Ave. & W. Atherton Dr.	OWSC	a.m.	12.3	B (NB)	No
			p.m.	10.2	B (NB)	No
3	Sparrowhawk St. & W. Atherton Dr.	OWSC	a.m.	13.1	B (NB)	No
			p.m.	10.4	B (NB)	No
4	Airport Way & Airport Dwy.	DNE	a.m.	-	-	-
			p.m.	-	-	-
5	W. Atherton Dr. & W. Atherton Dwy. West	DNE	a.m.	-	-	-
			p.m.	-	-	-
6	W. Atherton Dr. & W. Atherton Dwy. Central	DNE	a.m.	-	-	-
			p.m.	-	-	-
7	W. Atherton Dr. & W. Atherton Dwy. East	DNE	a.m.	-	-	-
			p.m.	-	-	-

Notes:

1. Signal = Signalized; AWSC = All-Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; DNE = Does Not Exist

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

"-" indicates not applicable.

4.0 EXISTING 2023 PLUS PROJECT CONDITIONS

This section describes the generation, distribution, and assignment of trips occurring as a result of the proposed development. The effects of the additional trips on the roadway network in the Project's vicinity are also discussed.

4.1 Project Trip Generation

In order to estimate trips generated by the proposed development for the weekday morning (a.m.) and weekday afternoon (p.m.) peak periods as well as for weekday daily trips, TJKM utilized the published trip generation rates from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition (TGM), and consistent with the methodology published in ITE's Trip Generation Handbook, 3rd Edition (TGH).

TJKM used published trip rates for the ITE Land Use Code (LUC) 320 (Hotel), LUC 821 (Shopping Center), LUC 840 (Automobile Sales (New)), LUC 934 (Restaurant with Drive-Thru Window), and LUC 945 (Convenience Store / Gas Station) to account for the proposed uses within the development. The trip generation is portrayed in **Table 4**.

Of note, the trip generation analysis herein accounts for the application of internal trip capture and pass-by trip reductions, consistent with the methodology presented in the TGH. Internal trip capture and pass-by rates were estimated for the proposed development.

Internal trips can generally be defined as "the total person trips generated by a site that are made entirely within the site" (ITE, 2017, p. 44). Developments that contain a multitude of uses operating in harmony (such as mixed-use developments that have both generators (e.g., residential uses, hotels) and attractors (e.g., retail stores, offices)) experience higher rates of internal capture.

Pass-by trips are defined as trips "made as an intermediate stop on the way from an origin to a primary trip destination without a route diversion" (ITE, 2017, p. 93). The intermediate stop in this case would be the proposed project for vehicles traveling from an origin to a primary destination. Engineering judgement indicates that a pass-by reduction would be applicable due to the proposed use.

As illustrated, without reductions applied, the proposed development would generate an estimated 14,980 trips during a typical weekday, with 1,024 trips occurring during the a.m. commuter peak hour and 1,119 trips occurring during the commuter p.m. peak hour.

When considering reductions, the proposed development is anticipated to generate an estimated 6,477 net new trips during a typical weekday, with 512 net new trips occurring during the a.m. commuter peak hour and 425 net new trips occurring during the commuter p.m. peak hour.

Table 4: Project Trip Generation (ITE TGM 11th Ed.; Peak Hour of the Adjacent Street)

Land Use	ITE Code	Size	----- Weekday -----											
			Daily		a.m. Peak Hour					p.m. Peak Hour				
			Rate	Total	Rate	In:Out %	In	Out	Total	Rate	In:Out %	In	Out	Total
PARCEL 1														
Gas Station and Convenience Store^[1]														
Convenience Store/Gas Station - GFA (2-4k)	945	12.0 Fueling Positions	265.12	2,750	16.06	50:50	96	97	193	18.42	50:50	110	111	221
Internal Trip Capture - Gas Station to Retail			-70				0	-2	-2			-5	-2	-7
Internal Trip Capture - Gas Station to Restaurant			-200				-4	-8	-12			-12	-9	-20
Net New Trips with Internal Trip Capture Reductions				2,480			92	87	179			93	100	194
Pass-by Reduction ^[2]		75.5% / 76.0% / 75.0% Daily / a.m. / p.m.		-1,872			-70	-66	-136			-70	-75	-146
Net New Trips with Reductions				608			22	21	43			23	25	48
Restaurant														
Restaurant with Drive-Thru Window	934	13.9 kSF of GFA	467.48	6,498	44.61	51:49	316	304	620	33.03	52:48	239	220	459
Internal Trip Capture - Restaurant to Gas Station			-200				-8	-4	-12			-9	-12	-20
Internal Trip Capture - Restaurant to Hotel			-60				-2	-1	-3			-2	-3	-6
Internal Trip Capture - Restaurant to Retail			-1,170				-4	-4	-8			-44	-73	-117
Net New Trips with Internal Trip Capture Reductions				5,068			302	295	597			184	132	316
Pass-by Reduction ^[3]		52.5% / 50.0% / 55.0% Daily / a.m. / p.m.		-2,661			-151	-148	-299			-101	-73	-174
Net New Trips with Reductions				2,407			151	147	298			83	59	142
General Retail														
Shopping Center (40 kSF < X < 150 kSF) (without Supermarke	821	58.0 kSF of GFA	67.52	3,916	1.73	62:38	62	38	100	5.19	49:51	147	154	301
Internal Trip Capture - Retail to Gas Station			-70				-2	0	-2			-2	-6	-7
Internal Trip Capture - Retail to Hotel			-20				0	0	0			0	-1	-2
Internal Trip Capture - Retail to Restaurant			-1,170				-4	-4	-8			-73	-44	-117
Net New Trips with Internal Trip Capture Reductions				2,656			56	34	90			72	103	175
Pass-by Reduction ^[4]		35.0% / 30.0% / 40.0% Daily / a.m. / p.m.		-930			-17	-10	-27			-29	-41	-70
Net New Trips with Reductions				1,726			39	24	63			43	62	105
PARCEL 2														
Hotel														
Hotel	310	120 Rooms	7.99	959	0.46	56:44	30	23	53	0.59	51:49	31	30	61
Internal Trip Capture - Hotel to Retail			-20				0	0	0			-2	0	-2
Internal Trip Capture - Hotel to Restaurant			-60				-1	-2	-3			-3	-2	-6
Net New Trips with Reductions				879			29	21	50			26	28	53
PARCEL 3														
Car Dealer														
Automobile Sales (New)	840	30.9 kSF of GFA	27.84	857	1.86	73:27	42	16	58	2.42	40:60	31	46	77
Net New Trips				857			42	16	58			31	46	77
Total Trips				14,980			546	478	1,024			558	561	1,119
Total Driveway Trips				11,940			521	453	974			406	409	815
Total Net New Trips				6,477			283	229	512			206	220	425

Notes:

General: Multiple ITE land use codes (LUC) have fitted curve equations (EQ) for various analysis periods in addition to rates. The methodology in the ITE's TGM was utilized to determine which was used.

[1] The provided plan from May 2023 illustrates a convenience store with a gas station with six aisles for fueling positions. For the purposes of this assessment, it was assumed that each aisle would have two fueling positions.

[2] ITE LUC 945 does not have data on daily pass-by rates. The pass-by volumes were approximated based on the a.m. and p.m. rates of 76.0% and 75.0%, respectively.

[3] ITE LUC 934 does not have data on daily pass-by rates. The pass-by volumes were approximated based on the a.m. and p.m. rates of 50.0% and 55.0%, respectively.

[4] ITE LUC 821 does not have data on daily or a.m. peak pass-by rates. The a.m. pass-by rate was approximated based on the p.m. pass-by rate of 40.0% less 10.0%. The daily pass-by rate was approximated based on the a.m. and p.m. pass-by rates.



4.2 Project Trip Distribution and Assignment

Trip distribution is a process of developing study assumptions that estimates the direction vehicular trips will arrive and depart the study site. Trip assignment estimates specific streets and turning movements at study intersections for project-related or site traffic.

Trip distribution and assignment assumptions for the proposed project were developed based on existing travel patterns, knowledge of the study area, and engineering judgment.

The assumed trip distribution for vehicles is as follows:

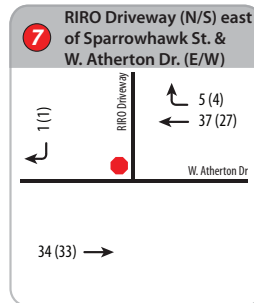
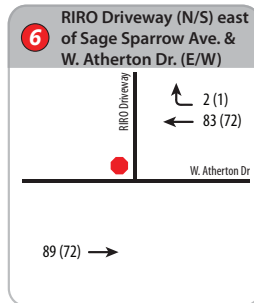
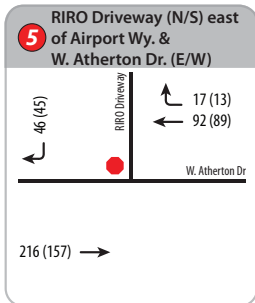
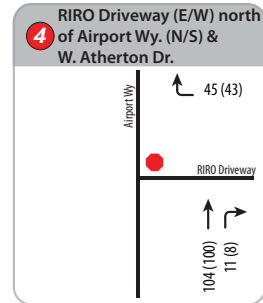
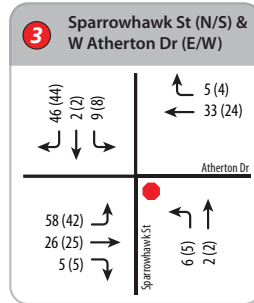
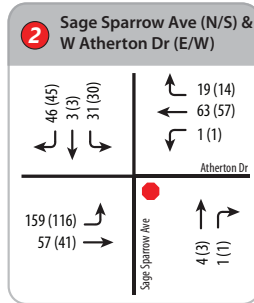
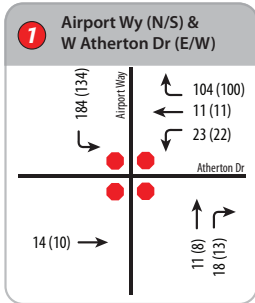
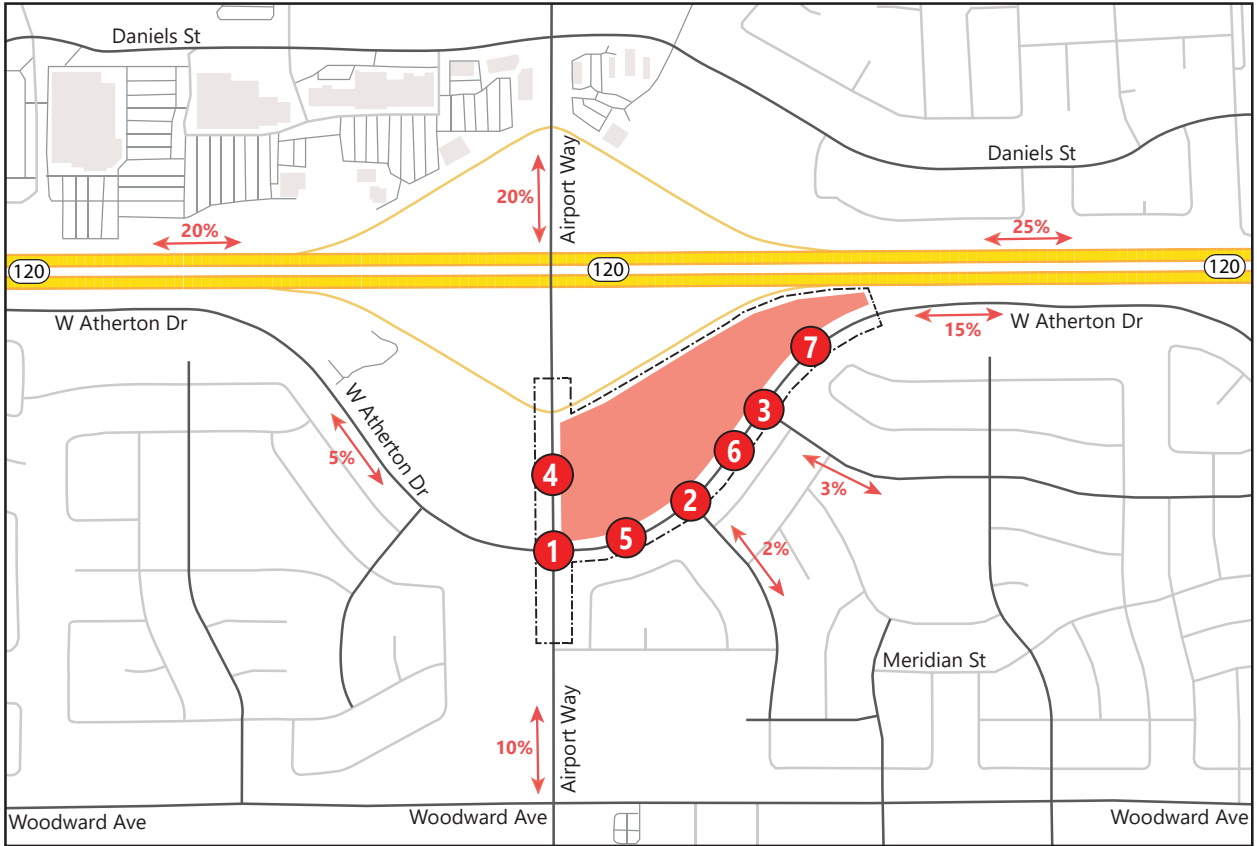
- 20 percent to/from the north via Airport Way,
- 20 percent to/from the west via Route 120,
- 5 percent to/from the west via Atherton Drive,
- 10 percent to/from the south via Airport Way,
- 2 percent to/from the southeast via Sage Sparrow Avenue,
- 3 percent to/from the east via Sparrowhawk Street,
- 15 percent to/from the east via Atherton Drive, and
- 25 percent to/from the east via Route 120.

Figure 8 illustrates the trip distribution and assignment of new project trips.

Figure 9 illustrates the trip assignment of pass-by trips.

The Existing 2023 plus Project Conditions peak hour traffic volumes were estimated by combining the existing peak hour traffic volumes and the Project's total trip assignment, as illustrated in **Figure 10**.

Figure 8: Project Trip Distribution and Assignment



LEGEND

■ Project Site

● Stop Sign

⊗ Study Intersection

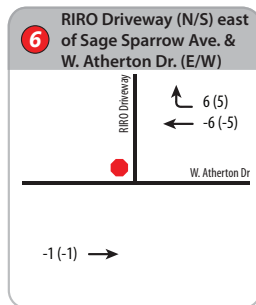
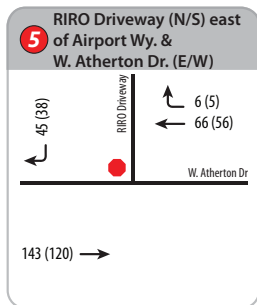
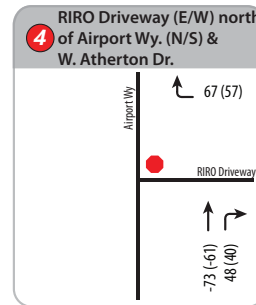
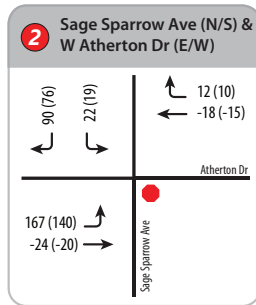
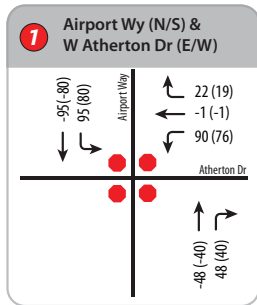
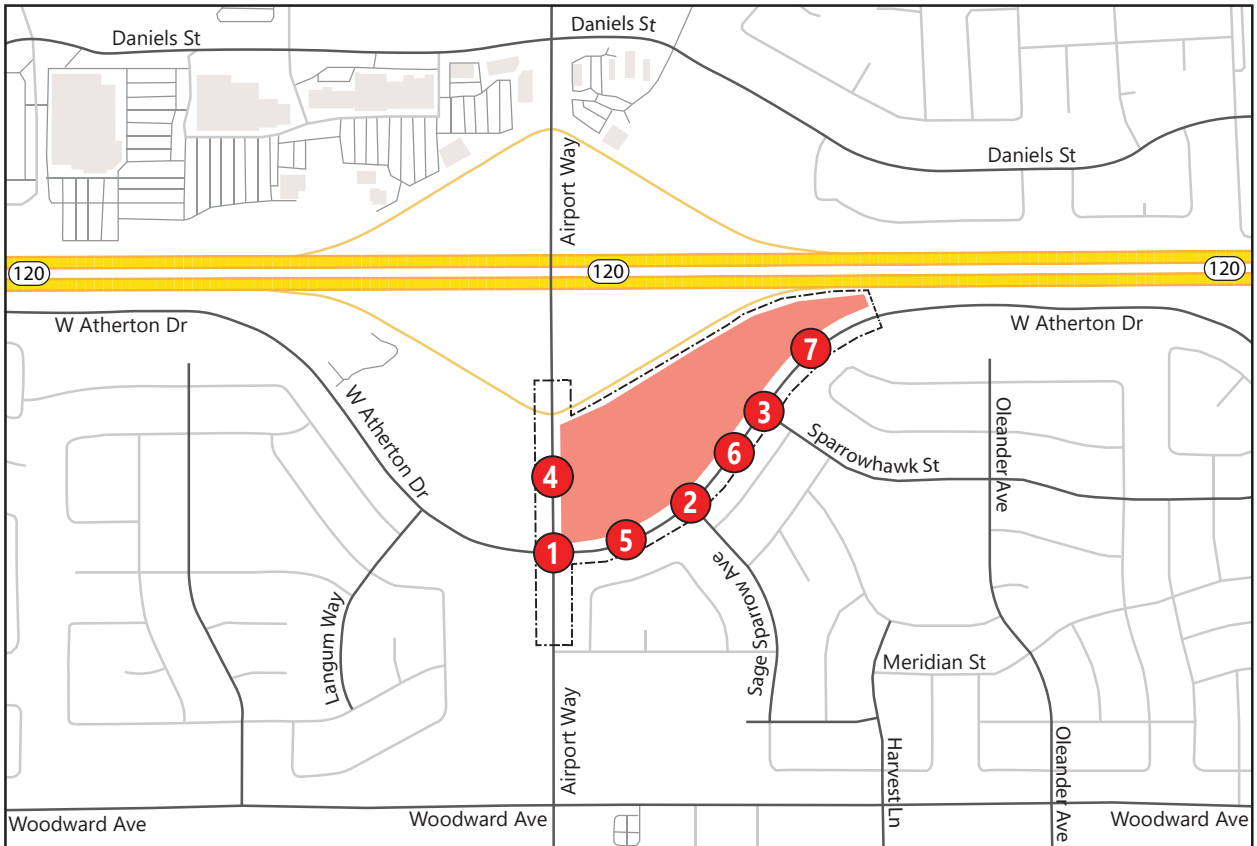
XX AM Peak Hour Trips

(XX) PM Peak Hour Trips

↔ XX% Trip Distribution



Figure 9: Project Pass-By Trip Assignment



LEGEND

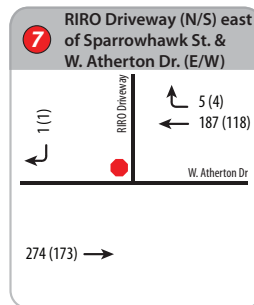
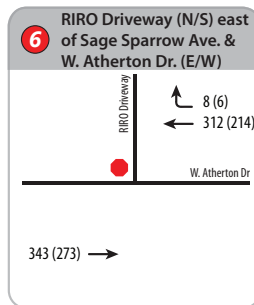
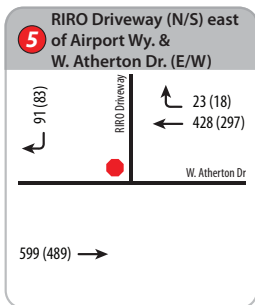
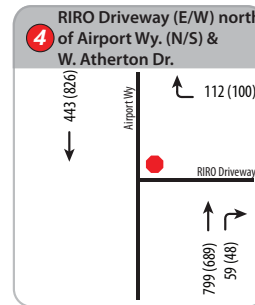
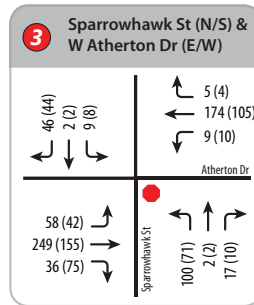
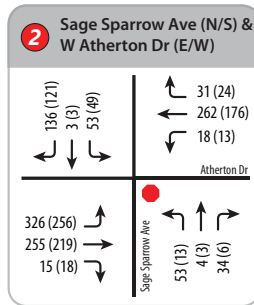
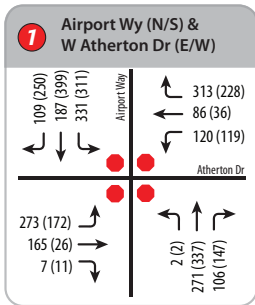
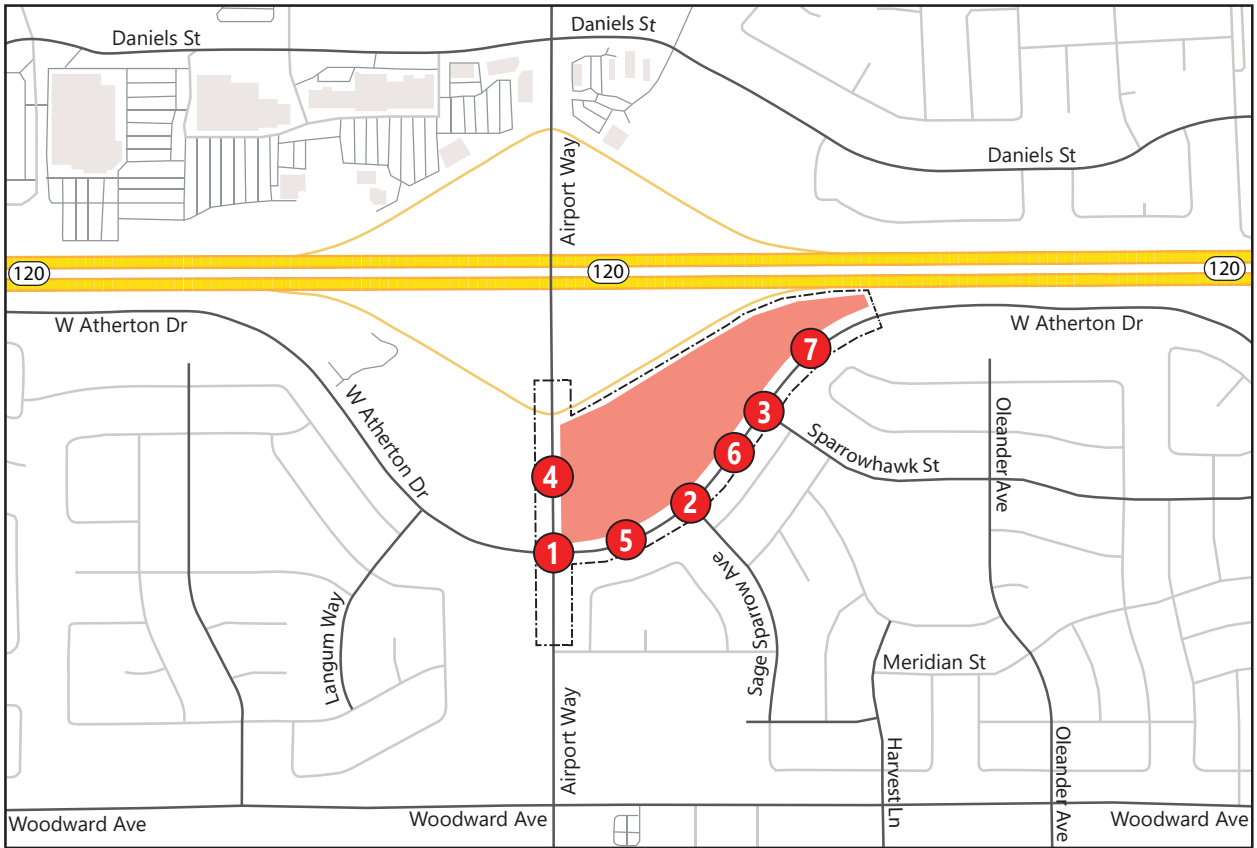
- Project Site
- Stop Sign

- ⊗ Study Intersection
- XX AM Peak Hour Trips

(XX) PM Peak Hour Trips



Figure 10: Existing 2023 plus Project Volumes



LEGEND

Project Site

Stop Sign

Study Intersection

AM Peak Hour Volumes

PM Peak Hour Volumes



4.3 Intersection Level of Service Analysis

The intersection level of service analysis results for the Existing 2023 plus Project Conditions scenario are summarized in **Table 5**. The results for Existing 2023 Conditions are included for comparison purposes. Intersections that operated at unacceptable thresholds are shown in red, and intersections that degraded between “No Project” conditions to “Plus Project” conditions per the applicable thresholds are likewise shown in red. Detailed calculation sheets for Existing 2023 plus Project Conditions are contained in **Appendix D**.

As illustrated in the table below, all but two of the study intersections would operate at LOS D or better during both peak hours. The intersection of W. Atherton Drive at Airport Way (Study Intersection 1) would degrade from LOS E in the p.m. peak hour to LOS F during both peak hours. The delays in the p.m. peak hour would increase by more than ten seconds. Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2) would degrade from LOS B to LOS F in the p.m. peak hour.

Signal warrants are met for both peak hours at Study Intersection 1 and during the p.m. peak hour at Study Intersection 2. Worksheets for signal warrants are available in **Appendix I**, **Appendix J**, and **Appendix K**.

The proposed development would have a **substantial** impact on the surrounding road network under the Existing 2023 plus Project Conditions scenario. Recommended improvements and mitigations are discussed below.

4.3.1 Suggested Improvements

The intersections of W. Atherton Drive at Airport Way (Study Intersection 1), Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2), and Sparrowhawk Street at W. Atherton Drive (Study Intersection 3) were analyzed to identify changes that could improve operations and reduce average delay. Signalization of Study Intersection 1 is currently a condition of approval of a separate development project at the northwest corner of the intersection (see signal plans, **Appendix L**), but additional improvements related to this proposed project are recommended below. At the direction of City of Manteca staff, Intersection 2 was modified to prevent left turns on or off of Sage Sparrow Avenue, and both existing traffic and project trips were rerouted to Sparrowhawk Street. As part of the modification, an acceleration lane is recommended for southbound left-turning vehicles, which reduces average delay on that approach. With care given to the placement of raised medians and channelization island, and to the radii of all corners, up to CA65 trucks can successfully turn in and out of the driveway. This includes fuel trucks and fire trucks. Larger trucks such as WB-67 would be required to divert to Intersection 3 to access the project site. Truck turning templates for the modified intersection are included in **Appendix M**.

The rerouting of traffic from Sage Sparrow Avenue to Sparrowhawk Street degrades operations at Intersection 3 to LOS E in the a.m. peak hour (under two-way stop control) but does not trigger the MUTCD peak hour signal warrant during either peak hour. As discussed in Section 6.2.1, signalization is recommended under improved Cumulative plus Project Conditions but does not require additional changes to lane geometry to maintain adequate LOS. As it is expected that immediate signalization will be a condition of approval for the project, the intersection was analyzed in this ultimate configuration, described below.

- **Study Intersection 1**
 - Signalize the intersection;
 - Restripe the eastbound approach to include two dedicated left-turn lanes, one through lane, and one through-right lane;
 - Widen the westbound approach to include one left-turn lane, two through lanes, and one right-turn only lane, with a permitted-overlap phase with the southbound left movement;
 - Protect all left-turn movements;
 - Adjust signal timing to optimize green times for each movement.
- **Study Intersection 2**
 - Restripe the northbound approach to include a right-turn only lane;
 - Install raised medians and channelizing island;
 - Provide an eastbound left-turn lane into the project driveway
 - Provide an eastbound acceleration lane for left-turns out of the project driveway.
- **Study Intersection 3**
 - Signalize the intersection;
 - Protect eastbound and westbound left-turn movements;
 - Adjust signal timing to optimize green times for each movement.
- **Study Intersection 4:**
 - Widen Airport Way to two lanes in each direction (related to widening at Intersection 1)
- **Study Intersection 5:**
 - Widen W. Atherton Drive (related to widening at Intersection 1)

Table 5 shows the change in intersection operating conditions resulting from the improvements (ultimate configuration). Detailed calculation sheets for Existing 2023 plus Project Conditions with Mitigations are contained in **Appendix E**.

Study Intersections 1 and 2 are brought back to acceptable LOS during both peak hours. The proposed Project would have a **less-than-substantial** effect on the surrounding roadway network with mitigations.

Table 5: Existing 2023 plus Project Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type ⁽¹⁾	Peak Hour ⁽²⁾	Existing 2023		Existing 2023 plus Project			Signal Warrants Satisfied?
				Conditions		Conditions			
				Delay ⁽³⁾ (sec / veh)	LOS ⁽⁴⁾	Delay ⁽³⁾ (sec / veh)	LOS ⁽⁴⁾	Change in Delay (sec)	
1	W. Atherton Dr. & Airport Way	AWSC	a.m.	32.6	D	80.1	F	47.5	Yes
			p.m.	44.3	E	55.9	F	11.6	Yes
		Signal	a.m.	-	-	30.7	C	-	-
			p.m.	-	-	22.7	C	-	-
2	Sage Sparrow Ave. & W. Atherton Dr.	TWSC	a.m.	12.3	B (NB)	285.5	F (NB)	273.2	Yes
			p.m.	10.2	B (NB)	23.1	C (NB)	12.9	No
		TWSC	a.m.	-	-	23.3	C (SB)	-	-
			p.m.	-	-	12.3	B	-	-
3	Sparrowhawk St. & W. Atherton Dr.	TWSC	a.m.	13.1	B (NB)	22.6	C (NB)	9.5	No
			p.m.	10.4	B (NB)	12.8	B (NB)	2.4	No
		Signal	a.m.	-	-	17.3	B	-	-
			p.m.	-	-	16.9	B	-	-
4	Airport Way & Airport Dwy.	OWSC	a.m.	-	-	21.6	C (WB)	-	-
			p.m.	-	-	17.4	C (WB)	-	-
		OWSC	a.m.	-	-	13.5	B (WB)	-	-
			p.m.	-	-	12.3	B (WB)	-	-
5	W. Atherton Dr. & W. Atherton Dwy. West	OWSC	a.m.	-	-	10.5	B (SB)	-	-
			p.m.	-	-	9.8	A (SB)	-	-
		OWSC	a.m.	-	-	11.6	B (SB)	-	-
			p.m.	-	-	10.8	B	-	-
6	W. Atherton Dr. & W. Atherton Dwy. Central	OWSC	a.m.	-	-	0.0	A (SB)	-	-
			p.m.	-	-	0.0	A (SB)	-	-
7	W. Atherton Dr. & W. Atherton Dwy. East	OWSC	a.m.	-	-	8.9	A (SB)	-	-
			p.m.	-	-	8.7	A (SB)	-	-

Notes:

1. Signal = Signalized; AWSC = All-Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; DNE = Does Not Exist

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

"-" indicates not applicable.

5.0 CUMULATIVE 2040 CONDITIONS

The current San Joaquin Council of Governments (SJCOG) travel demand model has a target year of 2040. In order to account for the potential impacts of the proposed development and expected regional growth by the target year, level of service analyses at the study intersections were conducted for cumulative conditions. Note that the peak hour factors for all cumulative scenarios and for both peak hours were set to 0.92.

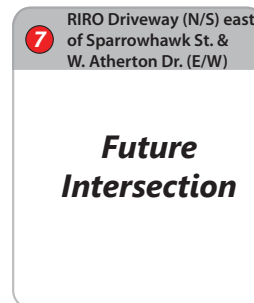
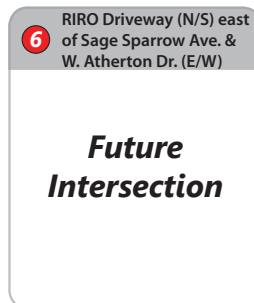
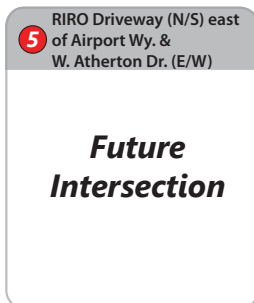
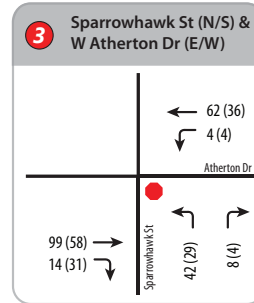
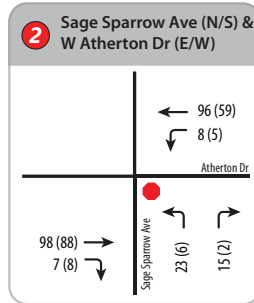
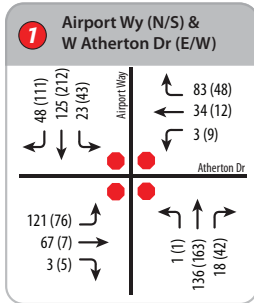
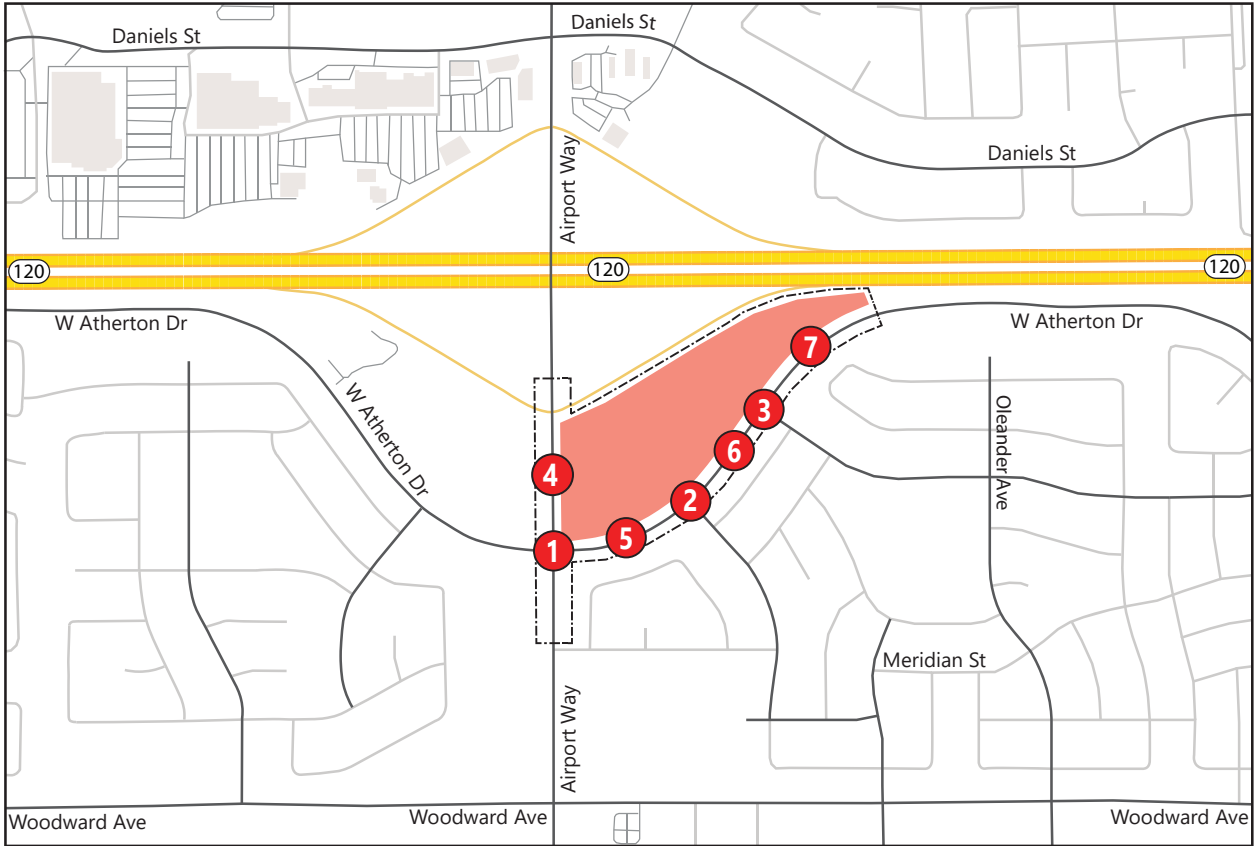
5.1 Inherent Regional Growth

In order to account for increased demand on the traffic network, an inherent growth rate was applied to obtain the cumulative scenarios by peak hour. This “inherent” growth rate was applied to account for regional development within the at-large area, which would ultimately result in increased roadway demand. Furthermore, the inherent growth rate is anticipated to account for any additional background development to be constructed within the immediate vicinity of the proposed development by 2040.

According to the latest SJCOG model, the nearby road network was expected to see an estimated growth in traffic of 2.178 percent per year from 2015 to 2042 for both peak hours. This growth rate was compounded annually over a 17-year period from 2023 to 2040 and applied to all movements under the Existing 2023 Conditions scenario at the study intersections. The inherent regional growth volumes are shown in **Figure 11**.

The Existing 2023 Condition peak hour traffic volumes were combined with the inherent regional growth in order to estimate the Cumulative 2040 Conditions peak hour traffic volumes, as illustrated in **Figure 12**.

Figure 11: Inherent Regional Growth Volumes (2023 to 2040)



LEGEND

Project Site

Stop Sign

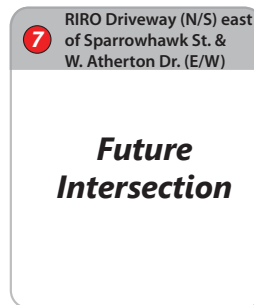
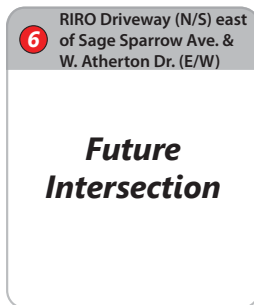
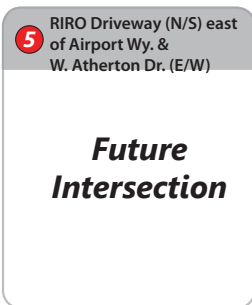
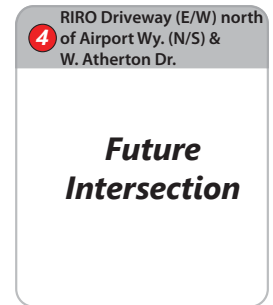
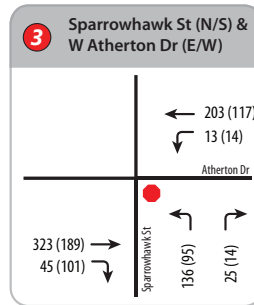
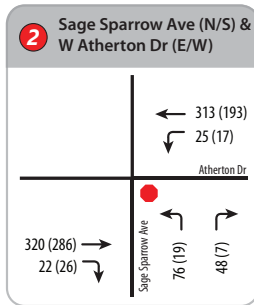
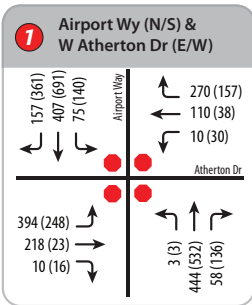
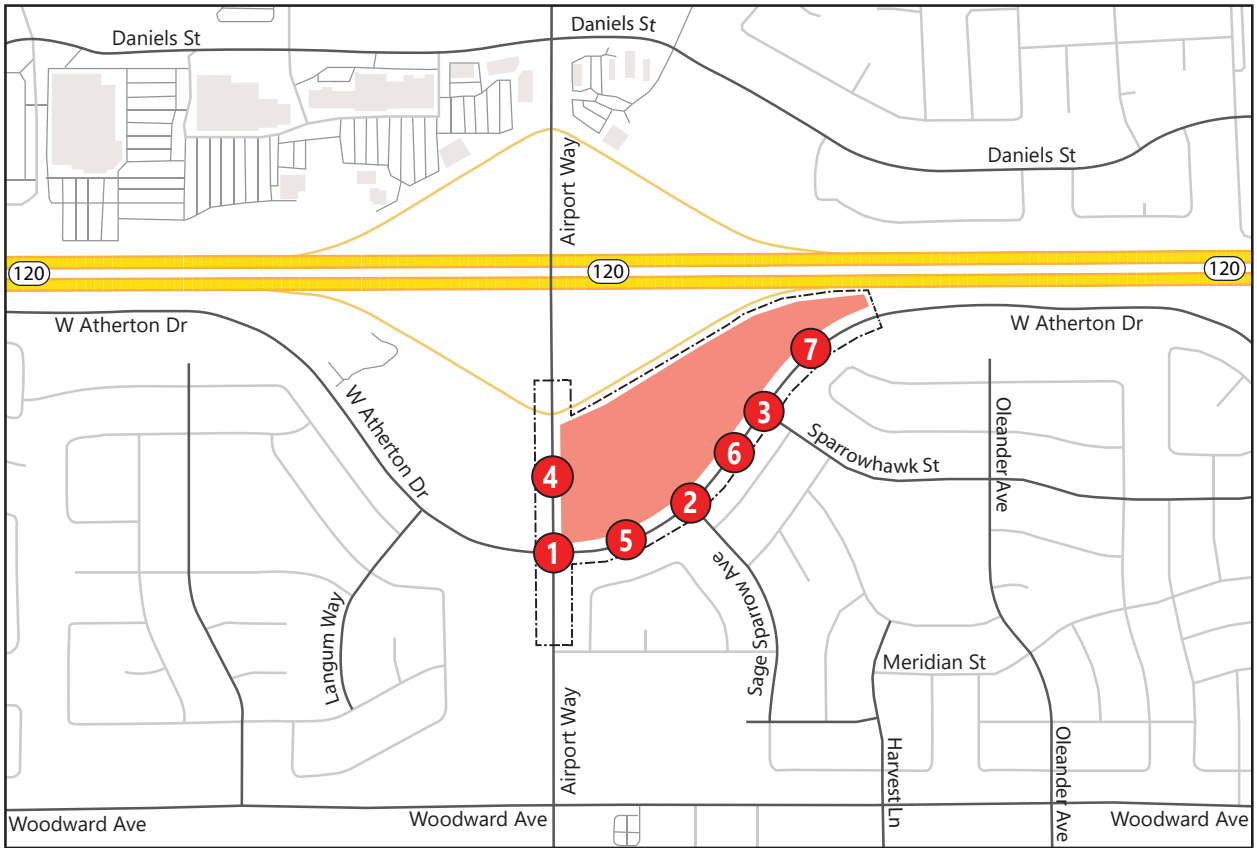
Study Intersection

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes



Figure 12: Cumulative 2040 Volumes



LEGEND

Project Site

Stop Sign

Study Intersection

AM Peak Hour Trips

(XX) PM Peak Hour Trips



5.2 Intersection Level of Service Analysis

Under Cumulative 2040 Conditions, the intersection of W. Atherton Drive at Airport Way (Study Intersection 1) is assumed to be signalized as a result of mitigation for a proposed commercial development located directly north-west of the intersection (see **Appendix L** for the planned improvements). Airport Way north of W. Atherton Drive is also assumed to be widened to four lanes (two-lanes in each direction) to be consistent with the City of Manteca’s long-term plans outlined in the *2040 General Plan*. All other geometric and timing parameters analyzed are identical to the Existing 2023 Conditions scenario.

The intersection LOS analysis results for Cumulative 2040 Conditions are summarized in **Table 6**. Detailed calculation sheets for Cumulative 2040 Conditions are contained in **Appendix F**.

As illustrated in the table below, all of the study intersections operate at LOS D or better during both peak hours. Signal warrants for Study Intersection 1 during both peak hours are satisfied.

Table 6: Cumulative 2040 Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type ⁽¹⁾	Peak Hour ⁽²⁾	Cumulative 2040 Conditions		Signal Warrants Satisfied?
				Delay ⁽³⁾ (sec / veh)	LOS ⁽⁴⁾	
1	W. Atherton Dr. & Airport Way	Signal	a.m.	27.5	C	Yes
			p.m.	22.3	C	Yes
2	Sage Sparrow Ave. & W. Atherton Dr.	OWSC	a.m.	14.2	B	No
			p.m.	11.6	B	No
3	Sparrowhawk St. & W. Atherton Dr.	OWSC	a.m.	15.5	C	No
			p.m.	12.0	B	No
4	Airport Way & Airport Dwy.	DNE	a.m.	-	-	-
			p.m.	-	-	-
5	W. Atherton Dr. & W. Atherton Dwy. West	DNE	a.m.	-	-	-
			p.m.	-	-	-
6	W. Atherton Dr. & W. Atherton Dwy. Central	DNE	a.m.	-	-	-
			p.m.	-	-	-
7	W. Atherton Dr. & W. Atherton Dwy. East	DNE	a.m.	-	-	-
			p.m.	-	-	-

Notes:

1. Signal = Signalized; AWSC = All-Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; DNE = Does Not Exist

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

"-" indicates not applicable.

6.0 CUMULATIVE 2040 PLUS PROJECT CONDITIONS

This section describes the impacts of the proposed Project at the study intersections and surrounding roadway system. The Cumulative 2040 plus Project Conditions scenario consists of cumulative traffic volumes and roadway facilities plus new traffic generated by the proposed Project. The Cumulative 2040 plus Project peak hour traffic volumes are illustrated in **Figure 13**.

Lane geometry and traffic control for the 2040 Cumulative plus Project Conditions are identical to Cumulative 2040 Conditions with the exception of the site driveways.

6.1 Intersection Level of Service Analysis

The intersection level of service analysis results for the Cumulative 2040 plus Project Conditions scenario are summarized in **Table 7**. The results for Cumulative 2040 Conditions are included for comparison purposes. Intersections that operated at unacceptable thresholds are shown in red, and intersections that degraded between “No Project” conditions to “Plus Project” conditions per the applicable thresholds are likewise shown in red. Detailed calculation sheets for Cumulative 2040 plus Project Conditions are contained in **Appendix G**.

As shown in the table below, all but two of the study intersections would operate at LOS D or better during both peak hours. The intersection of W. Atherton Drive at Airport Way (Study Intersection 1) would degrade from LOS C to LOS E in the a.m. peak hour, while the intersection of and Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2) would degrade from LOS B to LOS F in the a.m. peak hour. Signal warrants are met for both peak hours at Study Intersections 1 and 2.

Thus, the proposed development would have a **substantial** impact on the surrounding roadway network.

6.1.2 Suggested Improvements

The intersections of W. Atherton Drive at Airport Way (Study Intersection 1), Sage Sparrow Avenue at W. Atherton Drive (Study Intersection 2), and Sparrowhawk Street at W. Atherton Drive (Study Intersection 3) were further analyzed to identify minor changes that could improve operations and reduce average delay. The rerouting of traffic from Sage Sparrow Avenue to Sparrowhawk Street triggers the MUTCD peak hour signal warrant during the a.m. peak hour under this scenario, and signalization improves operations to acceptable levels without additional restriping. It should be noted that without traffic rerouting, the signal would not be warranted based solely on the addition of project trips.

The following changes would improve operations to acceptable LOS:

- **Study Intersection 1**
 - Widen the westbound approach to include one left-turn lane, two through lanes, and one right-turn only lane, with a permitted-overlap phase with the southbound left movement;
 - Restripe the dedicated northbound right-turn lane to a through-right lane;
 - Adjust signal timing to optimize green times for each movement.
- **Study Intersection 2**
 - Restripe the northbound approach to include a right-turn only lane;
 - Install raised medians and channelizing island;
 - Provide an eastbound left-turn lane into the project driveway
 - Provide an eastbound acceleration lane for left-turns out of the project driveway.

- **Study Intersection 3**
 - Signalize the intersection;
 - Protect eastbound and westbound left-turn movements;
 - Adjust signal timing to optimize green times for each movement.
- **Study Intersection 4:**
 - Widen Airport Way to two lanes in each direction (related to widening at Intersection 1) – already assumed for Cumulative Conditions
- **Study Intersection 5:**
 - Widen W. Atherton Drive (related to widening at Intersection 1)

The effects of the improvements listed above are shown in **Table 7**. A fair share analysis of signalization at Intersection 3 is shown in **Table 8**, showing that the project contributes 43% to total cumulative growth. Detailed calculation sheets for Cumulative 2040 plus Project Conditions with Mitigations are contained in **Appendix H**.

With mitigations, all study intersections operate at LOS D or better during both peak hours, and the proposed Project would have a **less-than-substantial** effect on the surrounding roadway network.

Table 7: Cumulative 2040 plus Project Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type ⁽¹⁾	Peak Hour ⁽²⁾	Cumulative 2040 Conditions		Cumulative 2040 plus Project Conditions			Signal Warrants Satisfied?
				Delay ⁽³⁾ (sec / veh)	LOS ⁽⁴⁾	Delay ⁽³⁾ (sec / veh)	LOS ⁽⁴⁾	Change in Delay (sec)	
1	W. Atherton Dr. & Airport Way	Signal	a.m.	27.5	C	72.6	E	45.1	Yes
			p.m.	22.3	C	50.7	D	28.4	Yes
		Signal	a.m.			41.2	D		
			p.m.			29.7	C		
2	Sage Sparrow Ave. & W. Atherton Dr.	TWSC	a.m.	14.2	B	334.3	F (NB)	320.1	Yes
			p.m.	11.6	B	33.6	D (SB)	22.0	Yes
		TWSC	a.m.			19.6	C (SB)		
			p.m.			13.5	B (SB)		
3	Sparrowhawk St. & W. Atherton Dr.	TWSC	a.m.	15.5	C	29.4	D (NB)	13.9	
			p.m.	12.0	B	9.8	A (SB)	-2.2	
		Signal	a.m.			11.1	B		No
			p.m.			9.7	A		No
4	Airport Way & Airport Dwy.	OWSC	a.m.	-	-	17.4	C (WB)	-	-
			p.m.	-	-	14.8	B (WB)	-	-
5	W. Atherton Dr. & W. Atherton Dwy. West	OWSC	a.m.	-	-	12.4	B (SB)	-	-
			p.m.	-	-	11.1	B (SB)	-	-
		OWSC	a.m.			12.4	B (SB)		
			p.m.			11.1	B (SB)		
6	W. Atherton Dr. & W. Atherton Dwy. Central	OWSC	a.m.	-	-	0.0	A	-	-
			p.m.	-	-	0.0	A	-	-
7	W. Atherton Dr. & W. Atherton Dwy. East	OWSC	a.m.	-	-	9.1	A (SB)	-	-
			p.m.	-	-	8.8	A (SB)	-	-

Notes:

1. Signal = Signalized; AWSC = All-Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; DNE = Does Not Exist



2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

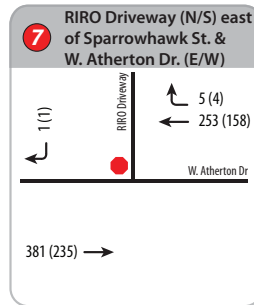
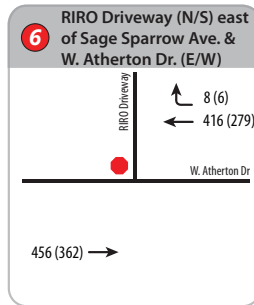
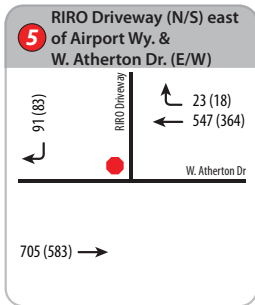
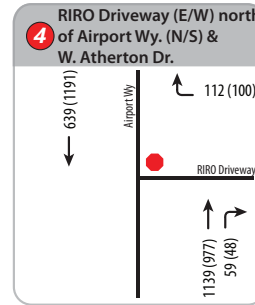
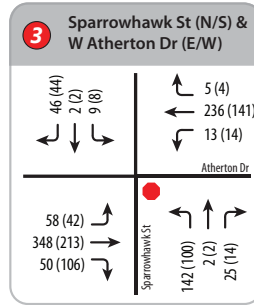
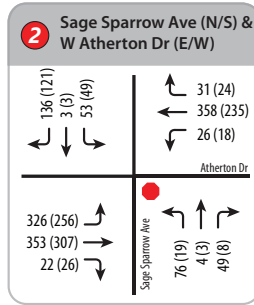
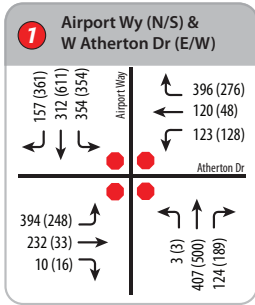
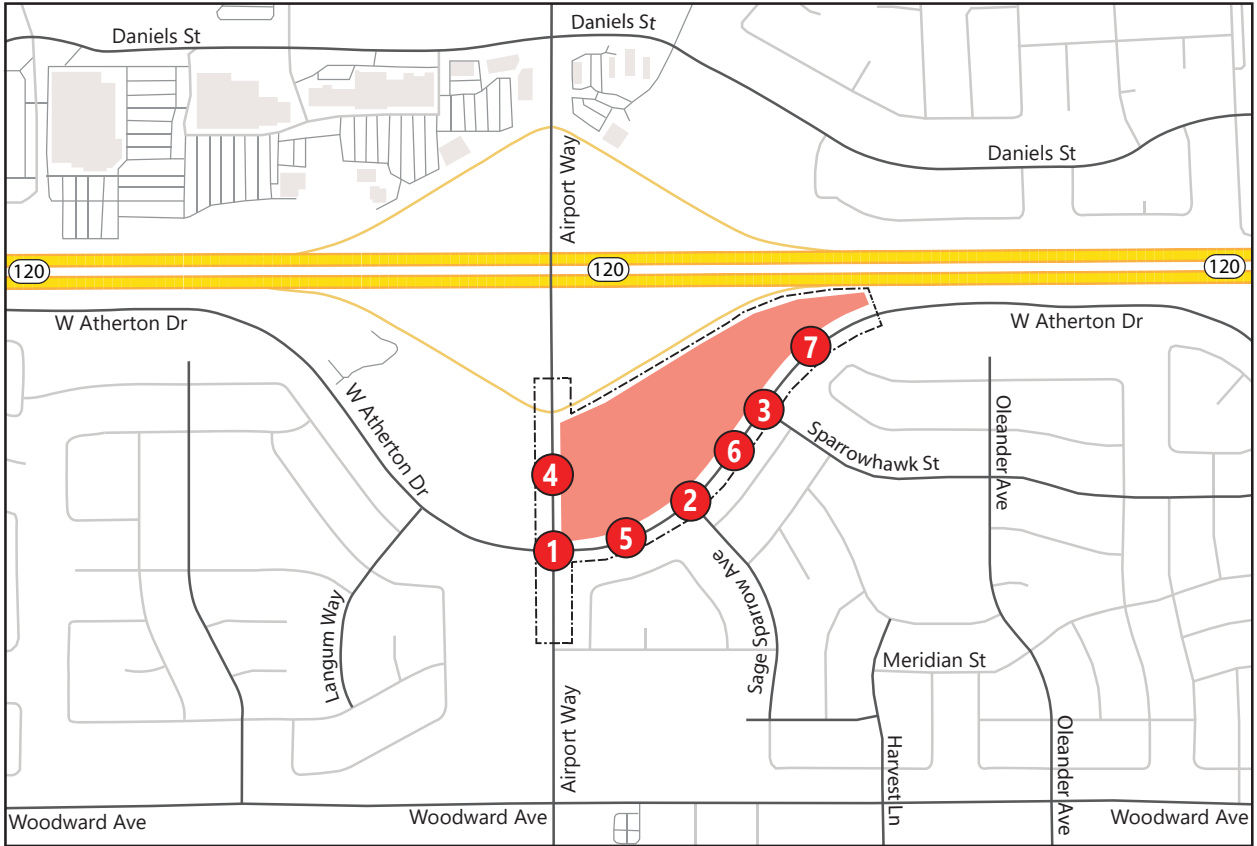
Red indicates unacceptable LOS.

"-" indicates not applicable.

Table 8: Fair Share Analysis – Sparrowhawk Street & W. Atherton Drive

	AM	PM	Total
A - Existing	516	371	887
B - Project Trips	199	167	366
C - Cumulative plus Project with Reroute	1019	715	1,734
D - Cumulative Growth (C-A)	503	344	847
E - Fair Share (B/D)	40%	49%	43%

Figure 13: Cumulative 2040 plus Project Volumes



LEGEND

Project Site

Stop Sign

Study Intersection

AM Peak Hour Volumes

PM Peak Hour Volumes



7.0 ADDITIONAL ANALYSIS

The following sections provide additional analyses of other transportation issues associated with the project site, including:

- Alternative Modes of Transportation; and
- On-Site Circulation.

Unlike the VMT or LOS impact methodology, the analyses in these sections are generally based on professional judgment in accordance with the standards and methods employed by traffic engineers and planners. This analysis references the site plan shown in **Figure 2**, dated November 16, 2023.

7.1 Alternative Modes of Transportation

7.1.1 Pedestrian Impacts

The proposed Project would preserve the existing Class I pedestrian-bike path along the northern curb of W. Atherton Drive and an existing concrete sidewalk along the eastern curb of Airport Way. A significant impact occurs if a proposed project conflicts with applicable or adopted policies, plans, or programs related to pedestrian facilities or otherwise decreases the performance or safety of pedestrian facilities. The proposed Project would not result in any such conflicts; therefore, the impact to pedestrian facilities is expected to be **less-than-significant**.

7.1.2 Bicycle Impacts

The proposed project can be accessed via existing bike lanes on Airport Way. An impact to bicyclists occurs if a proposed project disrupts existing bicycle facilities, or conflicts with or creates inconsistencies with adopted bicycle system plans, guidelines, and policies. A significant impact occurs if a proposed project conflicts with applicable or adopted policies, plans, or programs related to bicycle facilities or otherwise decreases the performance or safety of bicycle facilities. The proposed Project would not result in any such conflicts; therefore, the impact to bicycle facilities is expected to be **less-than-significant**.

7.1.3 Transit Impacts

A proposed project is considered to have a significant impact on transit if it conflicts with existing or planned transit facilities, or if it is expected to generate additional transit trips and it does not provide adequate facilities for additional pedestrians and bicyclists to access transit routes and stops. The proposed Project is located along Manteca Transit Route 4 that runs along Airport Way from W. Woodward Avenue with an hourly headway from 6:00 a.m. to 7:38 p.m. on weekdays. The closest bus stop is located near the intersection of Airport Way and Peregrine Street within a quarter-mile of the Project site. According to the City of Manteca's *2018 Short Range Transit Plan*, Route 4 is planned to be rerouted to connect to the Woodward Avenue/McKinley Avenue corridors and to a proposed Manteca Altamont Corridor Express commuter rail station on McKinley Avenue near SR 120. The proposed Project does not conflict with existing or planned transit facilities and is not expected to generate additional transit trips given its lack of proximity

to high-frequency, heavily-used transit stops or stations. Therefore the impact to transit facilities is expected to be **less-than-significant**.

7.2 On-Site Circulation

As shown in the site plan in **Figure 2**, the proposed retail site provides six driveways for vehicular traffic entry and exit from the facility. All the driveways will allow right-in/right-out movements. Additionally, Study Intersections 2 and 3 are expected to allow left-turn movements. The proposed hotel and car dealer will have one driveway (Study Intersection 3) nearby to allow left-turn movements and two other driveways (Study Intersections 6 and 7) nearby that allow right-in/right-out movements.

The proposed drive aisles appear to be of adequate size to provide sufficient space to accommodate standard auto traffic and, where needed, heavy vehicles. The service station is expected to serve both standard vehicles and trucks. Vehicles are expected to use Study Intersections 2, 4, or 5 to enter and exit the fueling station. Vehicles may use Study Intersections 4 and 5 to make right turns onto Airport Way and W. Atherton Drive, respectively, or use Study Intersection 2 to make left turns on W. Atherton Drive.

The driveways provide direct access to the individual parking areas, mostly located at the center of the site. The parking layout and pedestrian circulation appear satisfactory. The parking is conveniently located in front of all the proposed uses. The proposed site will utilize the existing sidewalk facilities available on W. Atherton Drive and Airport Way and also provide pedestrian walkways to access the stores and parking spots.

Enough space is provided behind the major store for loading trucks to access the facility. Trucks are expected to use Study Intersection 6 to reach the loading docks of the major retail locations and exit using Study Intersections 2, 4, or 5. Since the trucks are expected to arrive/depart at off-peak hours, they will not impact the pedestrians accessing the major stores.

Three restaurants/coffee shops with drive-through windows will have enough space to queue outside the facility. TJKM recommends drive-through queuing of ten to twelve vehicles for most drive-through uses, although certain brands require 20 to 25 vehicle storage.

TJKM concludes that the internal circulation on the project site will be **adequate**. However, it is recommended to include bicycle racks and possibly transit bus stops.

7.3 Off-Street Parking

The City of Manteca sets minimum vehicular parking standards in section 17.52.050 of its municipal code for all proposed developments. The applicable minimum parking standards for the proposed Project are shown in **Table 9**.

The proposed Project would provide 668 spaces, which is 53 spaces more than the required minimum of 615 spaces. For each proposed land use, minimum required parking standards are either met or more than met.

As all minimum parking standards are met, TJKM concludes that the number of off-street parking spaces to be provided by the proposed Project is **adequate**.

Table 9: Off-Street Parking Spaces

Use	Rate	Size	Unit	Required Spaces	Provided Spaces	Extra Spaces
Parcel 1						
General Retail	4/1000 SF	58,000	SF	232	283	51
Restaurant	10/1000 SF	13,900	SF	139	139	0
C-Store	1/pump	12	Pumps	12	14	2
Parcel 2						
Hotel	1 sp./Guest Rm. + 4 Add. Spaces	120	Rooms	124	124	0
Parcel 3						
Car Dealer	3.5/1000 SF	30,942	SF	108	108	0
Total Parking Spaces				615	668	53

Appendix A: HCM Methodology

APPENDIX A

LEVEL OF SERVICE

The description and procedures for calculating capacity and level of service are found in Transportation Research Board, Highway Capacity Manual 2000. Highway Capacity Manual 2000 represents the latest research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst. Each level of service represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish service levels.

A general description of service levels for various types of facilities is shown in Table A-1

Table A-1: Level of Service Description

	Uninterrupted Flow	Interrupted Flow
Facility Type	Freeways Multi-lane Highways Two-lane Highways Urban Streets	Signalized Intersections Unsignalized Intersections Two-way Stop Control All-way Stop Control
LOS		
A	Free-flow	Very low delay.
B	Stable flow. Presence of other users noticeable.	Low delay.
C	Stable flow. Comfort and convenience starts to decline.	Acceptable delay.
D	High density stable flow.	Tolerable delay.
E	Unstable flow.	Limit of acceptable delay.
F	Forced or breakdown flow.	Unacceptable delay

Source: Highway Capacity Manual 2000

Urban Streets

The term "urban streets" refers to urban arterials and collectors, including those in downtown areas.

Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials.

Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals.

Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control. As a result, these factors also affect quality of service.

The street environment includes the geometric characteristics of the facility, the character of roadside activity and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway density, spacing between signalized intersections, existence of parking, level of pedestrian activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses, and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic control (including signals and signs) forces a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds, however, such controls are needed to establish right-of-way.

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service. The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections.

Level-of-service A describes primarily free-flow operations. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal.

Level-of-service B describes reasonably unimpeded operations. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant.

Level-of-service C describes stable operations, however, ability to maneuver and change lanes in midblock location may be more restricted than at level-of-service B. Longer queues, adverse signal coordination, or both may contribute to lower travel speeds.

Level-of-service D borders on a range in which in which small increases in flow may cause substantial increases in delay and decreases in travel speed. Level-of-service D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors.

Level-of-service E is characterized by significant delays and lower travel speeds. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level-of-service F is characterized by urban street flow at extremely low speeds. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing.

The methodology to determine level of service stratifies urban streets into four classifications. The classifications are complex, and are related to functional and design categories. Table A-II describes the functional and design categories, while Table A-III relates these to the urban street classification.

Once classified, the urban street is divided into segments for analysis. An urban street segment is a one-way section of street encompassing a series of blocks or links terminating at a signalized intersection. Adjacent segments of urban streets may be combined to form larger street sections, provided that the segments have similar demand flows and characteristics.

Levels of service are related to the average travel speed of vehicles along the urban street segment or section.

Travel times for existing conditions are obtained by field measurements. The maximum-car technique is used. The vehicle is driven at the posted speed limit unless impeded by actual traffic conditions. In the maximum-car technique, a safe level of vehicular operation is maintained by observing proper following distances and by changing speeds at reasonable rates of acceleration and deceleration. The maximum-car technique provides the best base for measuring traffic performance.

An observer records the travel time and locations and duration of delay. The beginning and ending points are the centers of intersections. Delays include times waiting in queues at signalized intersections. The travel speed is determined by dividing the length of the segment by the travel time. Once the travel speed on the arterial is determined, the level of service is found by comparing the speed to the criteria in Table A-IV. Level-of-service criteria vary for the different classifications of urban street, reflecting differences in driver expectations.

Table A-II: Functional and Design Categories for Urban Streets

Criterion	Functional Category			
	Principal Arterial		Minor Arterial	
Mobility function	Very important		Important	
Access function	Very minor		Substantial	
Points connected	Freeways, important activity centers, major traffic generators		Principal arterials	
Predominant trips served	Relatively long trips between major points and through trips entering, leaving, and passing through city		Trips of moderate length within relatively small geographical areas	
Criterion	Design Category			
	High-Speed	Suburban	Intermediate	Urban
Driveway access density	Very low density	Low density	Moderate density	High density
Arterial type	Multilane divided; undivided or two-lane with shoulders	Multilane divided: undivided or two-lane with shoulders	Multilane divided or undivided; one way, two lane	Undivided one way; two way, two or more lanes
Parking	No	No	Some	Usually
Separate left-turn lanes	Yes	Yes	Usually	Some
Signals per mile	0.5 to 2	1 to 5	4 to 10	6 to 12
Speed limits	45 to 55 mph	40 to 45 mph	30 to 40 mph	25 to 35 mph
Pedestrian activity	Very little	Little	Some	Usually
Roadside development	Low density	Low to medium density	Medium to moderate density	High density

Source: Highway Capacity Manual 2000

Table A-III: Urban Street Class based on Function and Design Categories

Design Category	Functional Category	
	Principal Arterial	Minor Arterial
High-Speed	I	Not applicable
Suburban	II	II
Intermediate	II	III or IV
Urban	III or IV	IV

Source: Highway Capacity Manual 2000

Table A-IV: Urban Street Levels of Service by Class

Urban Street Class	I	II	III	IV
Range of Free Flow Speeds (mph)	45 to 55	35 to 45	30 to 35	25 to 35
Typical Free Flow Speed (mph)	50	40	33	30
Level of Service	Average Travel Speed (mph)			
A	>42	>35	>30	>25
B	>34	>28	>24	>19
C	>27	>22	>18	>13
D	>21	>17	>14	>9
E	>16	>13	>10	>7
F	≤16	≤13	≤10	≤7

Source: Highway Capacity Manual 2000

Interrupted Flow

One of the more important elements limiting, and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop and yield signs. These all operate quite differently and have differing impacts on overall flow.

Signalized Intersections

The capacity of a highway is related primarily to the geometric characteristics of the facility, as well as to the composition of the traffic stream on the facility. Geometrics are a fixed, or non-varying, characteristic of a facility.

At the signalized intersection, an additional element is introduced into the concept of capacity: time allocation. A traffic signal essentially allocates time among conflicting traffic movements seeking use of the same physical space. The way in which time is allocated has a significant impact on the operation of the intersection and on the capacity of the intersection and its approaches.

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, *i. e.*, in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, level of service criteria for traffic signals are stated in terms of average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the ratio of green time to cycle length and the volume to capacity ratio for the lane group.

For each intersection analyzed the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A level of service designation is given to the control delay to better describe the level of operation. A description of levels of service for signalized intersections can be found in Table A-V

Table A-V: Description of Level of Service for Signalized Intersections

Level of Service	Description
A	Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestions becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: Highway Capacity Manual 2000

The use of control delay, which may also be referred to as signal delay, was introduced in the 1997 update to the *Highway Capacity Manual*, and represents a departure from previous updates. In the third edition, published in 1985 and the 1994 update to the third edition, delay only included stopped delay. Thus, the level of service criteria listed in Table A-V differs from earlier criteria.

Unsignalized Intersections

The current procedures on unsignalized intersections were first introduced in the 1997 update to the *Highway Capacity Manual* and represent a revision of the methodology published in the 1994 update to the 1985 *Highway Capacity Manual*. The revised procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, *i. e.*, in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

Two-Way Stop Controlled Intersections

Two-way stop controlled intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At two-way stop-controlled intersections the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A level of service designation is given to the expected control delay for each minor movement. Level of service is not defined for the intersection as a whole. Control delay is the increased time of travel for a vehicle approaching and passing through a stop-controlled intersection, compared with a free-flow vehicle if it were not required

to slow or stop at the intersection. A description of levels of service for two-way stop-controlled intersections is found in Table A-VI.

Table A-VI: Description of Level of Service for Two-Way Stop Controlled Intersections

Level of Service	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay.

Source: Highway Capacity Manual 2000

Appendix B: Intersection Turning Movement Counts

National Data & Surveying Services Intersection Turning Movement Count

Location: #1 - Airport Way & W Atherton Dr
 City: Manteca
 Control: 4-Way Stop

Project ID: 23-090062-001
 Date: 5/25/2023

Data - Total

NS/EW Streets:	Airport Way				Airport Way				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	1	81	2	0	8	56	13	0	42	5	0	0	1	4	22	0	235
7:15 AM	2	105	0	0	7	49	12	0	53	5	2	0	0	4	29	0	268
7:30 AM	2	88	4	0	11	65	14	0	73	29	5	0	1	5	37	0	334
7:45 AM	0	77	12	0	13	59	21	0	62	53	0	0	3	24	49	0	373
8:00 AM	0	75	11	0	16	78	38	0	72	36	0	0	2	41	49	0	418
8:15 AM	0	68	13	0	12	80	36	0	66	33	2	0	1	6	52	0	369
8:30 AM	0	92	6	0	20	70	42	0	41	7	0	0	3	4	28	0	313
8:45 AM	0	78	3	0	20	69	30	1	31	5	2	0	1	4	25	0	269
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	5	664	51	0	107	526	206	1	440	173	11	0	12	92	291	0	2579
	0.69%	92.22%	7.08%	0.00%	12.74%	62.62%	24.52%	0.12%	70.51%	27.72%	1.76%	0.00%	3.04%	23.29%	73.67%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	308	40	0	52	282	109	0	273	151	7	0	7	76	187	0	1494
PEAK HR FACTOR :	0.250	0.875	0.769	0.000	0.813	0.881	0.717	0.000	0.935	0.712	0.350	0.000	0.583	0.463	0.899	0.000	0.894
	0.931				0.839				0.937				0.734				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	1	76	23	0	20	86	61	0	27	15	4	0	7	7	30	0	357
4:15 PM	3	91	29	0	15	124	69	0	37	9	2	0	5	7	15	0	406
4:30 PM	0	93	12	0	15	137	69	0	37	5	2	0	0	5	27	0	402
4:45 PM	0	73	18	0	23	127	65	0	40	11	0	0	5	4	26	0	392
5:00 PM	1	86	25	0	26	118	55	0	40	2	5	0	7	5	22	0	392
5:15 PM	0	92	31	0	22	119	61	0	41	4	2	0	3	7	25	0	407
5:30 PM	1	91	21	0	21	131	80	0	40	6	0	0	4	6	30	0	431
5:45 PM	0	100	17	0	28	111	54	0	51	4	4	0	7	8	32	0	416
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	6	702	176	0	170	953	514	0	313	56	19	0	38	49	207	0	3203
	0.68%	79.41%	19.91%	0.00%	10.38%	58.22%	31.40%	0.00%	80.67%	14.43%	4.90%	0.00%	12.93%	16.67%	70.41%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	369	94	0	97	479	250	0	172	16	11	0	21	26	109	0	1646
PEAK HR FACTOR :	0.500	0.923	0.758	0.000	0.866	0.914	0.781	0.000	0.843	0.667	0.550	0.000	0.750	0.813	0.852	0.000	0.955
	0.945				0.890				0.843				0.830				

National Data & Surveying Services Intersection Turning Movement Count

Location: #1 - Airport Way & W Atherton Dr
 City: Manteca
 Control: 4-Way Stop

Project ID: 23-090062-001
 Date: 5/25/2023

Data - Cars

NS/EW Streets:	Airport Way				Airport Way				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	1	79	2	0	6	50	12	0	40	5	0	0	1	2	22	0	220
7:15 AM	1	102	0	0	7	46	12	0	49	4	2	0	0	3	28	0	254
7:30 AM	2	81	4	0	10	59	11	0	72	29	4	0	0	5	37	0	314
7:45 AM	0	71	12	0	13	53	21	0	62	51	0	0	3	24	48	0	358
8:00 AM	0	67	11	0	16	69	37	0	72	36	0	0	2	41	49	0	400
8:15 AM	0	59	13	0	12	75	36	0	66	33	2	0	1	5	51	0	353
8:30 AM	0	86	6	0	20	68	42	0	39	7	0	0	3	4	27	0	302
8:45 AM	0	74	3	0	20	65	29	1	30	5	2	0	1	4	25	0	259
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	4	619	51	0	104	485	200	1	430	170	10	0	11	88	287	0	2460
	0.59%	91.84%	7.57%	0.00%	13.16%	61.39%	25.32%	0.13%	70.49%	27.87%	1.64%	0.00%	2.85%	22.80%	74.35%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	278	40	0	51	256	105	0	272	149	6	0	6	75	185	0	1425
PEAK HR FACTOR :	0.250	0.858	0.769	0.000	0.797	0.853	0.709	0.000	0.944	0.730	0.375	0.000	0.500	0.457	0.907	0.000	0.891
	0.920				0.837				0.945				0.723				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	1	72	22	0	20	81	61	0	27	15	4	0	7	7	30	0	347
4:15 PM	3	85	29	0	15	122	69	0	37	9	2	0	5	7	15	0	398
4:30 PM	0	89	12	0	15	130	67	0	37	5	2	0	0	5	27	0	389
4:45 PM	0	72	18	0	22	124	64	0	40	11	0	0	5	4	25	0	385
5:00 PM	1	83	25	0	25	118	55	0	40	2	4	0	7	5	22	0	387
5:15 PM	0	92	31	0	22	119	61	0	41	4	2	0	3	7	25	0	407
5:30 PM	1	89	21	0	21	129	80	0	39	6	0	0	4	6	30	0	426
5:45 PM	0	100	17	0	28	111	54	0	51	4	2	0	7	8	32	0	414
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	6	682	175	0	168	934	511	0	312	56	16	0	38	49	206	0	3153
	0.70%	79.03%	20.28%	0.00%	10.42%	57.90%	31.68%	0.00%	81.25%	14.58%	4.17%	0.00%	12.97%	16.72%	70.31%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	364	94	0	96	477	250	0	171	16	8	0	21	26	109	0	1634
PEAK HR FACTOR :	0.500	0.910	0.758	0.000	0.857	0.924	0.781	0.000	0.838	0.667	0.500	0.000	0.750	0.813	0.852	0.000	0.959
	0.935				0.895				0.855				0.830				

National Data & Surveying Services Intersection Turning Movement Count

Location: #1 - Airport Way & W Atherton Dr
 City: Manteca
 Control: 4-Way Stop

Project ID: 23-090062-001
 Date: 5/25/2023

Data - HT

NS/EW Streets:	Airport Way				Airport Way				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	0	2	0	0	2	6	1	0	2	0	0	0	0	2	0	0	15
7:15 AM	1	3	0	0	0	3	0	0	4	1	0	0	0	1	1	0	14
7:30 AM	0	7	0	0	1	6	3	0	1	0	1	0	1	0	0	0	20
7:45 AM	0	6	0	0	0	6	0	0	0	2	0	0	0	0	1	0	15
8:00 AM	0	8	0	0	0	9	1	0	0	0	0	0	0	0	0	0	18
8:15 AM	0	9	0	0	0	5	0	0	0	0	0	0	0	1	1	0	16
8:30 AM	0	6	0	0	0	2	0	0	2	0	0	0	0	0	1	0	11
8:45 AM	0	4	0	0	0	4	1	0	1	0	0	0	0	0	0	0	10
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	1	45	0	0	3	41	6	0	10	3	1	0	1	4	4	0	119
	2.17%	97.83%	0.00%	0.00%	6.00%	82.00%	12.00%	0.00%	71.43%	21.43%	7.14%	0.00%	11.11%	44.44%	44.44%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	30	0	0	1	26	4	0	1	2	1	0	1	1	2	0	69
PEAK HR FACTOR :	0.000	0.833	0.000	0.000	0.250	0.722	0.333	0.000	0.250	0.250	0.250	0.000	0.250	0.250	0.500	0.000	0.863
	0.833				0.775				0.500				0.500				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	0	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0	10
4:15 PM	0	6	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8
4:30 PM	0	4	0	0	0	7	2	0	0	0	0	0	0	0	0	0	13
4:45 PM	0	1	0	0	1	3	1	0	0	0	0	0	0	0	1	0	7
5:00 PM	0	3	0	0	1	0	0	0	0	0	1	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	2	0	0	0	2	0	0	1	0	0	0	0	0	0	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	20	1	0	2	19	3	0	1	0	3	0	0	0	1	0	50
	0.00%	95.24%	4.76%	0.00%	8.33%	79.17%	12.50%	0.00%	25.00%	0.00%	75.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	5	0	0	1	2	0	0	1	0	3	0	0	0	0	0	12
PEAK HR FACTOR :	0.000	0.417	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.600
	0.417				0.375				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: #1 - Airport Way & W Atherton Dr
 City: Manteca
 Control: 4-Way Stop

Project ID: 23-090062-001
 Date: 5/25/2023

Data - Bikes

NS/EW Streets:	Airport Way				Airport Way				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0	0	0	0	75.00%	25.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	7
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	3	1	0	0	0	2	0	0	7
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.875
	0.250								0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0

National Data & Surveying Services Intersection Turning

Movement Count

#1 - Airport Way & W Atherton Dr
 Location: #1 - Airport Way & W Atherton Dr
 City: Manteca

Project ID: 23-090062-001
 Date: 5/25/2023

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Airport Way		Airport Way		W Atherton Dr		W Atherton Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	1	0	0	0	2
7:45 AM	0	0	0	0	1	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	1	0	0	1
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	1	0	1	0	2	1	0	0	5
	100.00%	0.00%	100.00%	0.00%	66.67%	33.33%			
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	1	0	2	0	0	0	3
PEAK HR FACTOR :			0.250		0.500				0.375
			0.250		0.500				

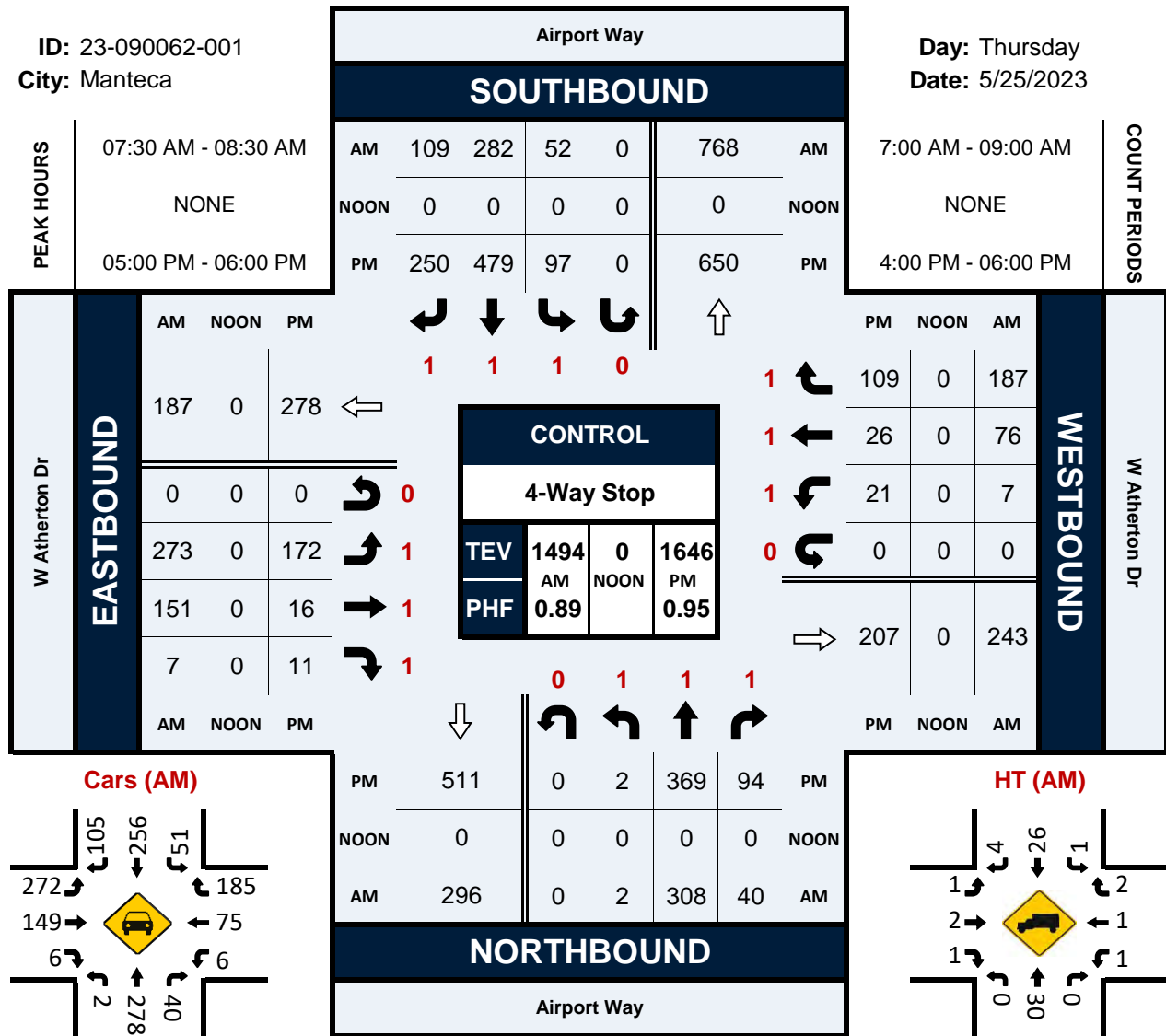
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	1	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	1
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	2	0	2	0	0	0	0	4
	0.00%	100.00%	0.00%	100.00%					
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	1	0	1	0	0	0	0	2
PEAK HR FACTOR :		0.250		0.250					0.500
		0.250		0.250					

#1 - Airport Way & W Atherton Dr

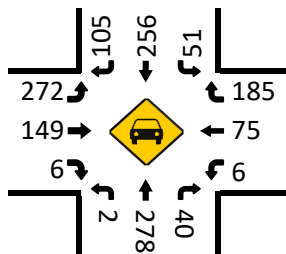
Peak Hour Turning Movement Count

ID: 23-090062-001
City: Manteca

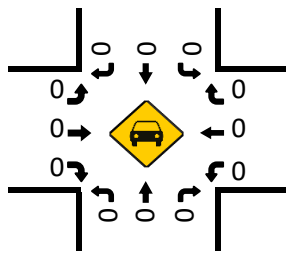
Day: Thursday
Date: 5/25/2023



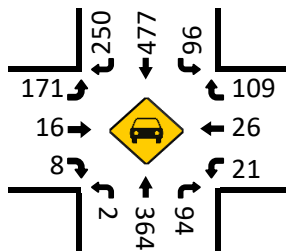
Cars (AM)



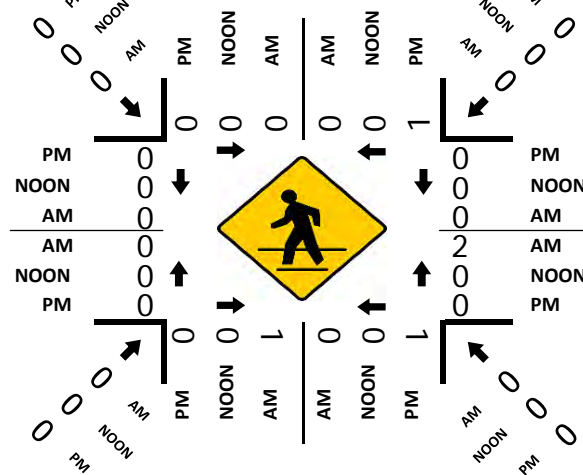
Cars (NOON)



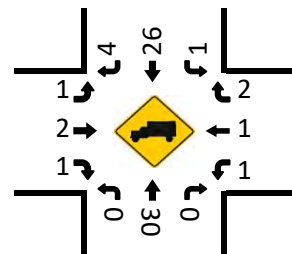
Cars (PM)



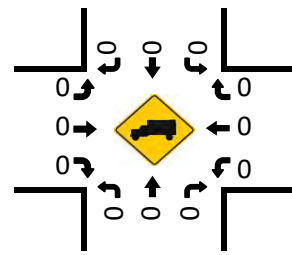
Pedestrians (Crosswalks)



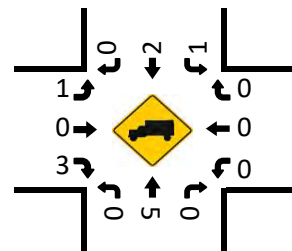
HT (AM)



HT (NOON)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: #2 - Sage Sparrow Ave & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-002
 Date: 5/25/2023

Data - Total

NS/EW Streets:	Sage Sparrow Ave				Sage Sparrow Ave				W Atherton Dr				W Atherton Dr							
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU				
7:00 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	48	
7:15 AM	7	0	4	0	0	0	0	0	0	15	0	0	0	0	22	0	0	0	43	
7:30 AM	11	0	10	0	0	0	0	0	0	42	2	0	0	0	35	0	0	0	100	
7:45 AM	16	0	13	0	0	0	0	0	0	71	2	0	0	10	57	0	0	0	169	
8:00 AM	11	0	7	0	0	0	0	0	0	64	4	0	0	7	84	0	0	0	177	
8:15 AM	15	0	3	0	0	0	0	0	0	45	7	0	0	0	41	0	0	0	111	
8:30 AM	4	0	2	0	0	0	0	0	0	31	7	0	0	3	31	0	0	0	78	
8:45 AM	3	0	0	0	0	0	0	0	0	27	2	0	0	2	27	0	0	0	61	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			TOTAL	
APPROACH %'s :	74	0	39	0	0	0	0	0	0	306	25	0	0	22	321	0	0	0	787	
	65.49%	0.00%	34.51%	0.00%					0.00%	92.45%	7.55%	0.00%	6.41%	93.59%	0.00%	0.00%				
PEAK HR :	07:30 AM - 08:30 AM																TOTAL			
PEAK HR VOL :	53	0	33	0	0	0	0	0	0	222	15	0	0	17	217	0	0	0	557	
PEAK HR FACTOR :	0.828	0.000	0.635	0.000	0.000	0.000	0.000	0.000	0.000	0.782	0.536	0.000	0.425	0.646	0.000	0.000	0.000	0.000	0.787	
	0.741																0.812	0.643		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU				
4:00 PM	0	1	0	0	0	0	0	0	0	49	7	1	0	35	0	0	0	0	102	
4:15 PM	1	0	4	0	0	0	0	0	0	44	10	0	0	4	28	0	0	0	91	
4:30 PM	5	0	3	0	0	0	0	0	0	25	3	0	0	1	25	0	0	0	62	
4:45 PM	2	0	2	0	0	0	0	0	0	51	4	1	0	1	36	0	0	0	97	
5:00 PM	5	0	1	0	0	0	0	0	0	47	8	0	0	3	29	0	0	0	93	
5:15 PM	2	0	0	0	0	0	0	0	0	52	3	0	0	6	28	0	0	0	91	
5:30 PM	4	0	2	0	0	0	0	0	0	46	3	1	0	2	41	0	0	0	99	
5:45 PM	6	0	1	0	0	0	0	0	0	38	10	0	0	3	35	0	0	0	93	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			TOTAL	
APPROACH %'s :	33	0	15	0	0	0	0	0	0	352	48	3	0	20	257	0	0	0	728	
	68.75%	0.00%	31.25%	0.00%					0.00%	87.34%	11.91%	0.74%	7.22%	92.78%	0.00%	0.00%				
PEAK HR :	04:45 PM - 05:45 PM																TOTAL			
PEAK HR VOL :	13	0	5	0	0	0	0	0	0	196	18	2	0	12	134	0	0	0	380	
PEAK HR FACTOR :	0.650	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.942	0.563	0.500	0.500	0.817	0.000	0.000	0.000	0.000	0.960	
	0.750																0.964	0.849		

National Data & Surveying Services Intersection Turning Movement Count

Location: #2 - Sage Sparrow Ave & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-002
 Date: 5/25/2023

Data - Cars

NS/EW Streets:	Sage Sparrow Ave				Sage Sparrow Ave				W Atherton Dr				W Atherton Dr					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	7	0	4	0	0	0	0	0	0	13	0	0	0	0	20	0	0	44
7:15 AM	7	0	0	0	0	0	0	0	0	10	1	0	0	0	22	0	0	40
7:30 AM	10	0	10	0	0	0	0	0	0	41	2	0	0	0	35	0	0	98
7:45 AM	15	0	13	0	0	0	0	0	0	69	2	0	10	57	0	0	166	
8:00 AM	11	0	7	0	0	0	0	0	0	64	4	0	7	84	0	0	177	
8:15 AM	14	0	3	0	0	0	0	0	0	45	7	0	0	40	0	0	109	
8:30 AM	4	0	2	0	0	0	0	0	0	31	7	0	3	30	0	0	77	
8:45 AM	3	0	0	0	0	0	0	0	0	27	2	0	2	27	0	0	61	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	71	0	39	0	0	0	0	0	0	300	25	0	22	315	0	0	772	
	64.55%	0.00%	35.45%	0.00%					0.00%	92.31%	7.69%	0.00%	6.53%	93.47%	0.00%	0.00%		
PEAK HR :	07:30 AM - 08:30 AM																TOTAL	
PEAK HR VOL :	50	0	33	0	0	0	0	0	0	219	15	0	17	216	0	0	550	
PEAK HR FACTOR :	0.833	0.000	0.635	0.000	0.000	0.000	0.000	0.000	0.000	0.793	0.536	0.000	0.425	0.643	0.000	0.000	0.777	
	0.741								0.824				0.640					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	8	0	2	0	0	0	0	0	0	49	6	1	0	35	0	0	101	
4:15 PM	1	0	4	0	0	0	0	0	0	44	10	0	4	28	0	0	91	
4:30 PM	5	0	3	0	0	0	0	0	0	25	3	0	1	25	0	0	62	
4:45 PM	2	0	2	0	0	0	0	0	0	50	4	1	1	35	0	0	95	
5:00 PM	5	0	1	0	0	0	0	0	0	46	8	0	3	29	0	0	92	
5:15 PM	2	0	0	0	0	0	0	0	0	52	3	0	6	28	0	0	91	
5:30 PM	4	0	2	0	0	0	0	0	0	46	3	1	2	41	0	0	99	
5:45 PM	6	0	1	0	0	0	0	0	0	38	10	0	3	35	0	0	93	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	33	0	15	0	0	0	0	0	0	350	47	3	20	256	0	0	724	
	68.75%	0.00%	31.25%	0.00%					0.00%	87.50%	11.75%	0.75%	7.25%	92.75%	0.00%	0.00%		
PEAK HR :	04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :	13	0	5	0	0	0	0	0	0	194	18	2	12	133	0	0	377	
PEAK HR FACTOR :	0.650	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.933	0.563	0.500	0.500	0.811	0.000	0.000	0.952	
	0.750								0.973				0.843					

National Data & Surveying Services Intersection Turning Movement Count

Location: #2 - Sage Sparrow Ave & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-002
 Date: 5/25/2023

Data - HT

NS/EW Streets:	Sage Sparrow Ave				Sage Sparrow Ave				W Atherton Dr				W Atherton Dr					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	3
7:30 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
7:45 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s:	3	0	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	15
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR:	07:30 AM - 08:30 AM																TOTAL	
PEAK HR VOL:	3	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	7
PEAK HR FACTOR:	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.583
										0.375				0.250				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s:	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	4
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR:	04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL:	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	3
PEAK HR FACTOR:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375
										0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: #2 - Sage Sparrow Ave & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-002
 Date: 5/25/2023

Data - Bikes

NS/EW Streets:	Sage Sparrow Ave				Sage Sparrow Ave				W Atherton Dr				W Atherton Dr					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
		0	1	0	0	0	0	0	0	0	2	0	0	0	2	0		0
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
	8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL	
PEAK HR VOL :	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	
PEAK HR FACTOR :	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.375	
									0.250									
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
		0	1	0	0	0	0	0	0	0	2	0	0	0	2	0		0
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	

National Data & Surveying Services **Intersection Turning** Movement Count

Location: #2 - Sage Sparrow Ave & W Atherton Dr
City: Manteca

Project ID: 23-090062-002
Date: 5/25/2023

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Sage Sparrow Ave		Sage Sparrow Ave		W Atherton Dr		W Atherton Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	1
7:30 AM	0	0	1	1	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	0	2	2	0	0	0	0	4
			50.00%	50.00%					
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	1	2	0	0	0	0	3
PEAK HR FACTOR :			0.250	0.500					0.375
			0.375						

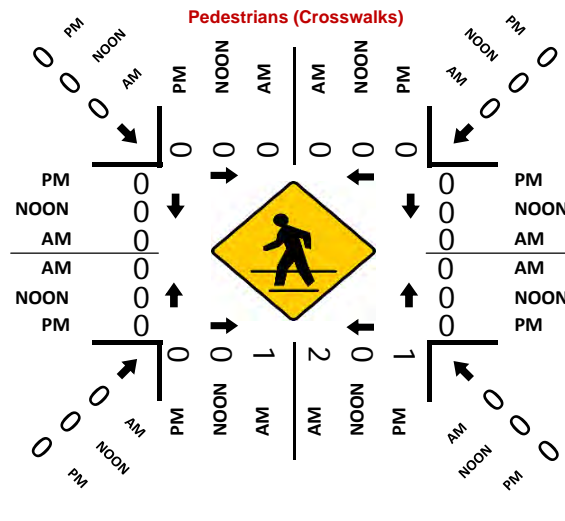
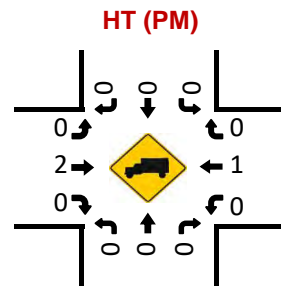
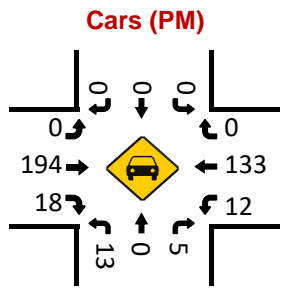
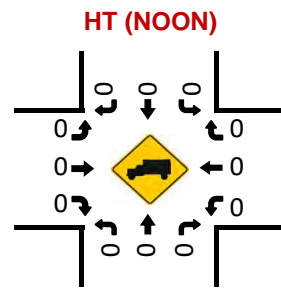
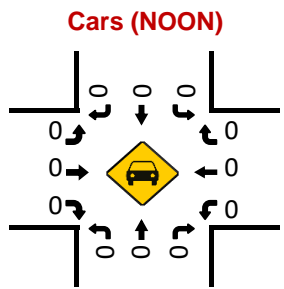
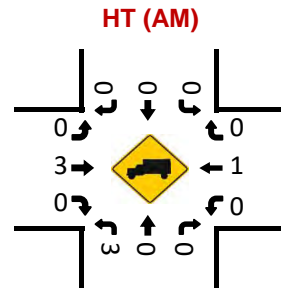
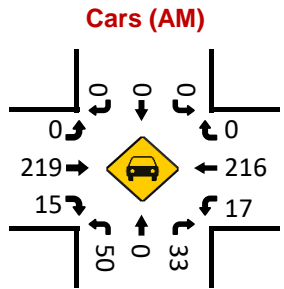
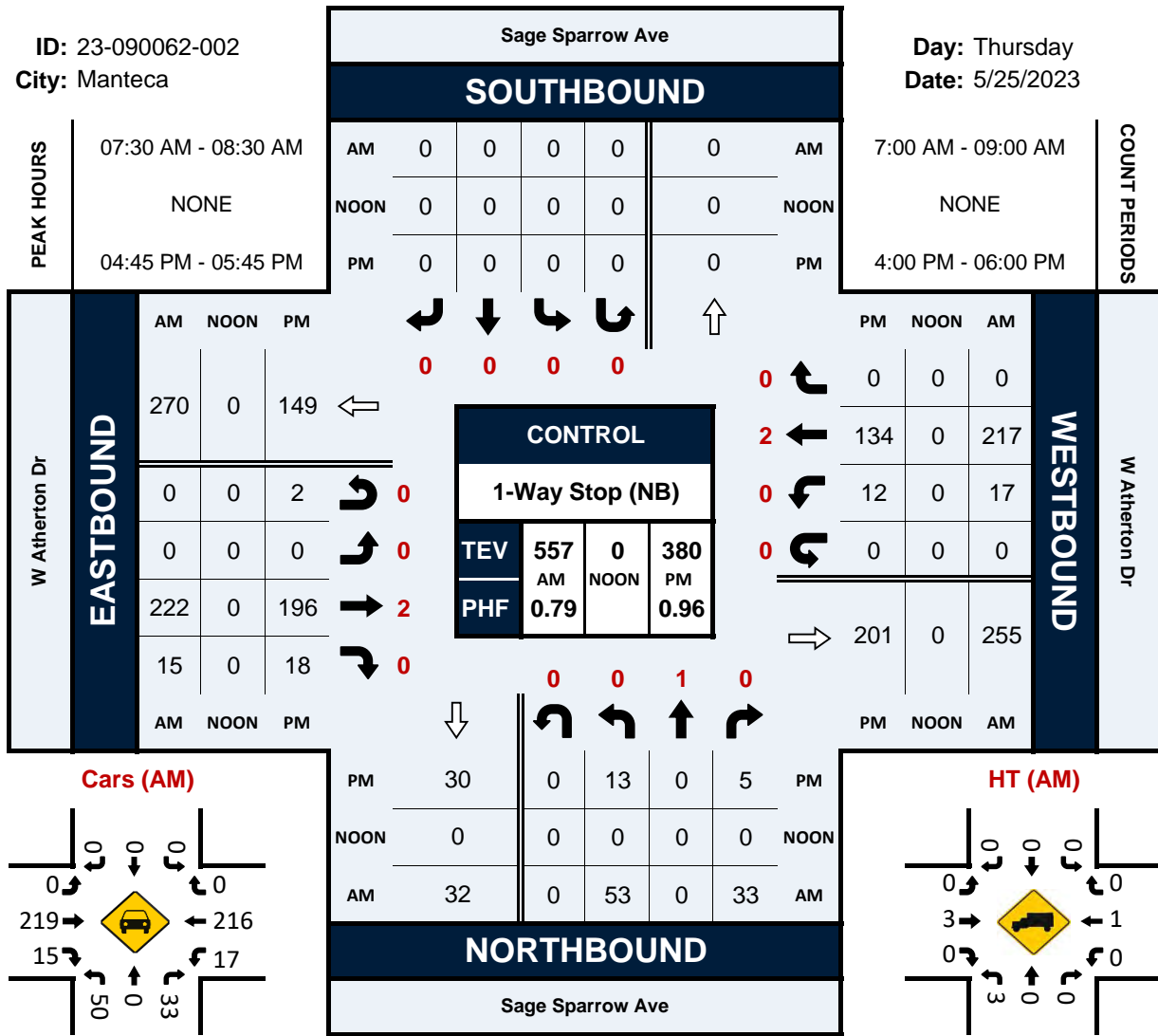
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	2	0	0	0	2
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	0	1	1	2	0	0	0	4
			50.00%	50.00%	100.00%	0.00%			
PEAK HR :	04:45 PM - 05:45 PM								TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	0	1
PEAK HR FACTOR :			0.250	0.250					0.250
			0.250						

Sage Sparrow Ave & W Atherton Dr

Peak Hour Turning Movement Count

ID: 23-090062-002
City: Manteca

Day: Thursday
Date: 5/25/2023



National Data & Surveying Services Intersection Turning Movement Count

Location: #3 - Sparrowhawk St & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-003
 Date: 5/25/2023

Data - Total

NS/EW Streets:	Sparrowhawk St				Sparrowhawk St				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	14	0	1	0	0	0	0	0	0	13	6	0	2	8	0	0	44
7:15 AM	15	0	1	0	0	0	0	0	0	0	5	6	0	1	9	0	37
7:30 AM	15	0	4	0	0	0	0	0	0	44	6	0	0	20	0	0	89
7:45 AM	25	0	6	0	0	0	0	0	0	81	5	0	4	45	0	0	166
8:00 AM	25	0	2	0	0	0	0	0	0	57	14	0	3	63	0	0	164
8:15 AM	29	0	5	0	0	0	0	0	0	42	6	0	2	13	0	0	97
8:30 AM	18	0	3	0	0	0	0	0	0	23	10	0	2	15	0	0	71
8:45 AM	16	0	1	0	0	0	0	0	0	15	12	0	1	14	0	0	59
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	157	0	23	0	0	0	0	0	0	280	65	0	15	187	0	0	727
	87.22%	0.00%	12.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	81.16%	18.84%	0.00%	7.43%	92.57%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	94	0	17	0	0	0	0	0	0	224	31	0	9	141	0	0	516
PEAK HR FACTOR :	0.810	0.000	0.708	0.000	0.000	0.000	0.000	0.000	0.000	0.691	0.554	0.000	0.563	0.560	0.000	0.000	0.777
	0.816								0.741				0.568				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	11	0	3	0	0	0	0	0	0	36	16	0	1	23	0	0	90
4:15 PM	13	0	7	0	0	0	0	0	0	33	14	0	3	19	0	0	89
4:30 PM	13	0	3	0	0	0	0	0	0	18	9	0	2	14	0	0	59
4:45 PM	19	0	1	0	0	0	0	0	0	34	18	0	1	19	0	0	92
5:00 PM	13	0	3	0	0	0	0	0	0	31	16	0	2	19	0	0	84
5:15 PM	14	0	5	0	0	0	0	0	0	35	18	0	2	21	0	0	95
5:30 PM	20	0	1	0	0	0	0	0	0	31	18	0	5	22	0	0	97
5:45 PM	15	0	3	0	0	0	0	0	0	26	12	0	6	24	0	0	86
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	118	0	26	0	0	0	0	0	0	244	121	0	22	161	0	0	692
	81.94%	0.00%	18.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.85%	33.15%	0.00%	12.02%	87.98%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	66	0	10	0	0	0	0	0	0	131	70	0	10	81	0	0	368
PEAK HR FACTOR :	0.825	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.936	0.972	0.000	0.500	0.920	0.000	0.000	0.948
	0.905								0.948				0.843				

National Data & Surveying Services Intersection Turning Movement Count

Location: #3 - Sparrowhawk St & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-003
 Date: 5/25/2023

Data - Cars

NS/EW Streets:	Sparrowhawk St				Sparrowhawk St				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	14	0	1	0	0	0	0	0	0	12	5	0	2	6	0	0	40
7:15 AM	14	0	1	0	0	0	0	0	0	5	5	0	1	8	0	0	34
7:30 AM	15	0	4	0	0	0	0	0	0	43	6	0	0	20	0	0	88
7:45 AM	25	0	6	0	0	0	0	0	0	79	5	0	3	45	0	0	163
8:00 AM	25	0	2	0	0	0	0	0	0	57	14	0	3	63	0	0	164
8:15 AM	29	0	5	0	0	0	0	0	0	42	6	0	2	12	0	0	96
8:30 AM	17	0	3	0	0	0	0	0	0	23	10	0	2	15	0	0	70
8:45 AM	16	0	1	0	0	0	0	0	0	15	12	0	1	14	0	0	59
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	155	0	23	0	0	0	0	0	0	276	63	0	14	183	0	0	714
APPROACH %'s:	87.08%	0.00%	12.92%	0.00%					0.00%	81.42%	18.58%	0.00%	7.11%	92.89%	0.00%	0.00%	
PEAK HR:	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL:	94	0	17	0	0	0	0	0	0	221	31	0	8	140	0	0	511
PEAK HR FACTOR:	0.810	0.000	0.708	0.000	0.000	0.000	0.000	0.000	0.000	0.699	0.554	0.000	0.667	0.556	0.000	0.000	0.779
	0.816								0.750				0.561				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	11	0	2	0	0	0	0	0	0	36	16	0	1	23	0	0	89
4:15 PM	13	0	6	0	0	0	0	0	0	33	14	0	3	19	0	0	88
4:30 PM	13	0	3	0	0	0	0	0	0	18	9	0	2	14	0	0	59
4:45 PM	18	0	1	0	0	0	0	0	0	34	17	0	1	19	0	0	90
5:00 PM	13	0	3	0	0	0	0	0	0	31	15	0	2	19	0	0	83
5:15 PM	14	0	5	0	0	0	0	0	0	35	18	0	2	21	0	0	95
5:30 PM	20	0	1	0	0	0	0	0	0	31	18	0	5	22	0	0	97
5:45 PM	15	0	3	0	0	0	0	0	0	26	12	0	6	24	0	0	86
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	117	0	24	0	0	0	0	0	0	244	119	0	22	161	0	0	687
APPROACH %'s:	82.98%	0.00%	17.02%	0.00%					0.00%	67.22%	32.78%	0.00%	12.02%	87.98%	0.00%	0.00%	
PEAK HR:	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL:	65	0	10	0	0	0	0	0	0	131	68	0	10	81	0	0	365
PEAK HR FACTOR:	0.813	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.936	0.944	0.000	0.500	0.920	0.000	0.000	0.941
	0.893								0.939				0.843				

National Data & Surveying Services Intersection Turning Movement Count

Location: #3 - Sparrowhawk St & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-003
 Date: 5/25/2023

Data - HT

NS/EW Streets:	Sparrowhawk St				Sparrowhawk St				W Atherton Dr				W Atherton Dr					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	4
7:15 AM	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	2	0	0	0	0	0	0	0	0	4	2	0	1	4	0	0	13	
	100.00%	0.00%	0.00%	0.00%					0.00%	66.67%	33.33%	0.00%	20.00%	80.00%	0.00%	0.00%		
PEAK HR :	07:30 AM - 08:30 AM																TOTAL	
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	5	
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.250	0.250	0.000	0.000	0.417	
									0.375				0.500					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	1	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	5	
	33.33%	0.00%	66.67%	0.00%					0.00%	0.00%	100.00%	0.00%						
PEAK HR :	04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.375	
									0.500									

National Data & Surveying Services Intersection Turning Movement Count

Location: #3 - Sparrowhawk St & W Atherton Dr
 City: Manteca
 Control: 1-Way Stop (NB)

Project ID: 23-090062-003
 Date: 5/25/2023

Data - Bikes

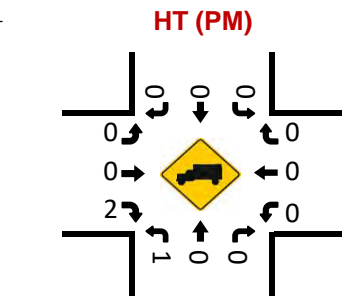
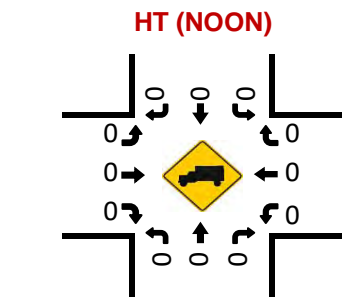
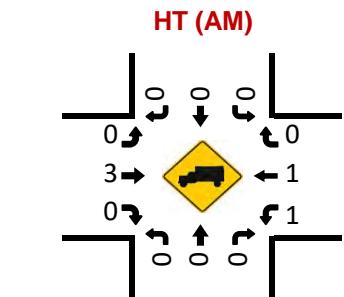
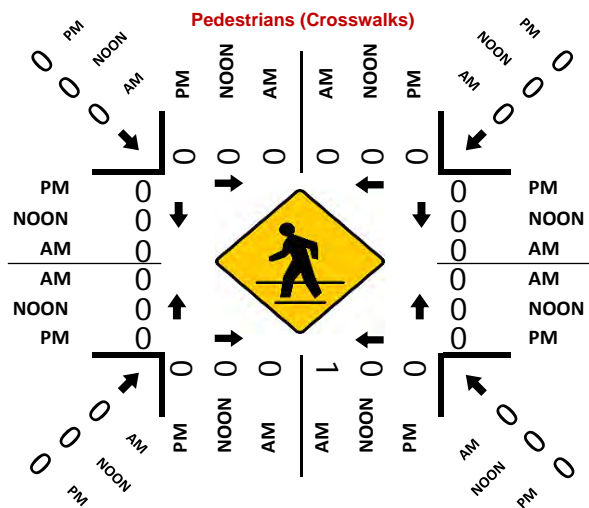
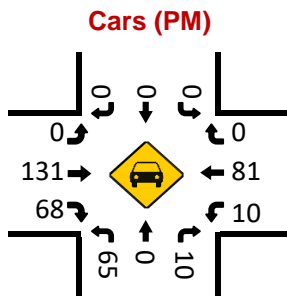
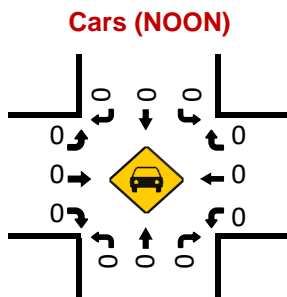
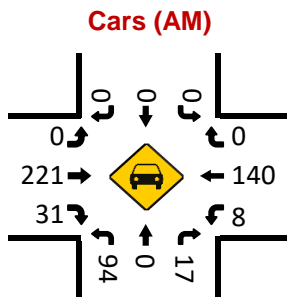
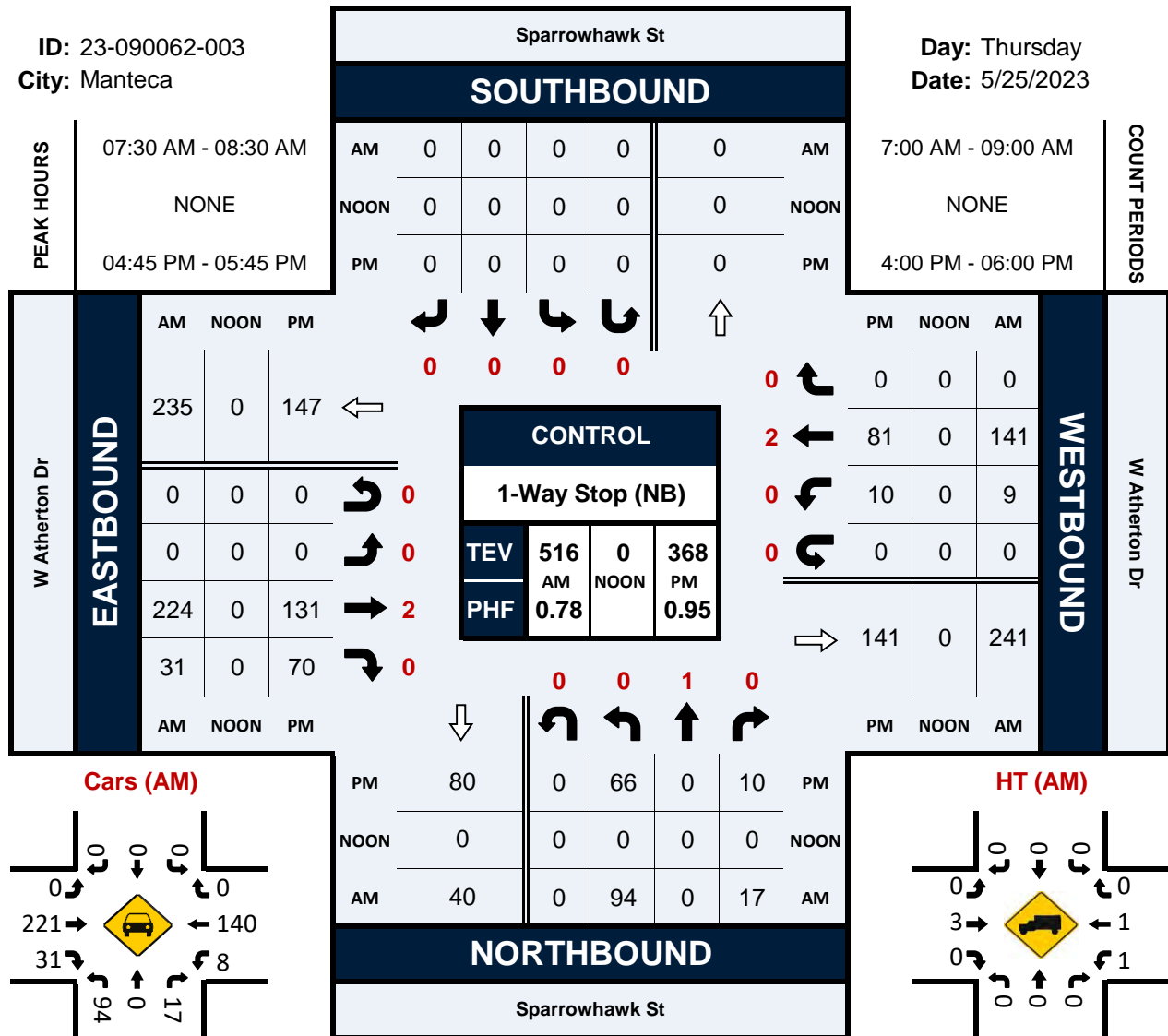
NS/EW Streets:	Sparrowhawk St				Sparrowhawk St				W Atherton Dr				W Atherton Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	0	0	0	100.00%	0.00%	0.00%	0.00%	1
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0

Sparrowhawk St & W Atherton Dr

Peak Hour Turning Movement Count

ID: 23-090062-003
City: Manteca

Day: Thursday
Date: 5/25/2023



Appendix C: Existing 2023 Conditions Capacity Analysis Worksheets

Intersection	
Intersection Delay, s/veh	32.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	273	151	7	7	76	187	2	308	40	52	282	109
Future Vol, veh/h	273	151	7	7	76	187	2	308	40	52	282	109
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	307	170	8	8	85	210	2	346	45	58	317	122
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	33.1	19	46.4	29.5
HCM LOS	D	C	E	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	308	40	273	151	7	7	76	187	52	282
LT Vol	2	0	0	273	0	0	7	0	0	52	0
Through Vol	0	308	0	0	151	0	0	76	0	0	282
RT Vol	0	0	40	0	0	7	0	0	187	0	0
Lane Flow Rate	2	346	45	307	170	8	8	85	210	58	317
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.006	0.88	0.106	0.807	0.423	0.018	0.022	0.227	0.517	0.154	0.79
Departure Headway (Hd)	9.659	9.159	8.459	9.467	8.967	8.267	10.063	9.563	8.863	9.479	8.979
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	370	395	423	383	400	432	355	375	406	378	402
Service Time	7.424	6.924	6.224	7.23	6.73	6.03	7.834	7.334	6.634	7.244	6.744
HCM Lane V/C Ratio	0.005	0.876	0.106	0.802	0.425	0.019	0.023	0.227	0.517	0.153	0.789
HCM Control Delay	12.5	51.1	12.2	41.9	18.2	11.2	13.1	15.1	20.8	14	38.3
HCM Lane LOS	B	F	B	E	C	B	B	C	C	B	E
HCM 95th-tile Q	0	8.8	0.4	7.1	2.1	0.1	0.1	0.9	2.9	0.5	6.8

HCM 6th TWSC
2: Sage Sparrow Ave. & W. Atherton Dr.

Timing Plan: EX AM
07/17/2023

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	222	15	17	217	53	33
Future Vol, veh/h	222	15	17	217	53	33
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	281	19	22	275	67	42

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	303	0	476
Stage 1	-	-	-	-	294
Stage 2	-	-	-	-	182
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1255	-	518
Stage 1	-	-	-	-	730
Stage 2	-	-	-	-	831
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1251	-	507
Mov Cap-2 Maneuver	-	-	-	-	507
Stage 1	-	-	-	-	728
Stage 2	-	-	-	-	816

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	603	-	-	1251	-
HCM Lane V/C Ratio	0.181	-	-	0.017	-
HCM Control Delay (s)	12.3	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

HCM 6th TWSC
 3: Sparrowhawk St. & W. Atherton Dr.

Timing Plan: EX AM
 07/17/2023

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	224	31	9	141	94	17
Future Vol, veh/h	224	31	9	141	94	17
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	85	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	287	40	12	181	121	22

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	328	0	423
Stage 1	-	-	-	-	308
Stage 2	-	-	-	-	115
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1228	-	559
Stage 1	-	-	-	-	719
Stage 2	-	-	-	-	897
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1227	-	553
Mov Cap-2 Maneuver	-	-	-	-	553
Stage 1	-	-	-	-	718
Stage 2	-	-	-	-	888

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	584	-	-	1227	-
HCM Lane V/C Ratio	0.244	-	-	0.009	-
HCM Control Delay (s)	13.1	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Intersection	
Intersection Delay, s/veh	44.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	172	16	11	21	26	109	2	369	94	97	479	250
Future Vol, veh/h	172	16	11	21	26	109	2	369	94	97	479	250
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	181	17	12	22	27	115	2	388	99	102	504	263
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	19.8	14.2	41	57.7
HCM LOS	C	B	E	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	369	94	172	16	11	21	26	109	97	479
LT Vol	2	0	0	172	0	0	21	0	0	97	0
Through Vol	0	369	0	0	16	0	0	26	0	0	479
RT Vol	0	0	94	0	0	11	0	0	109	0	0
Lane Flow Rate	2	388	99	181	17	12	22	27	115	102	504
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.005	0.887	0.207	0.479	0.042	0.027	0.06	0.071	0.274	0.23	1.067
Departure Headway (Hd)	8.717	8.224	7.534	9.684	9.184	8.484	9.934	9.434	8.734	8.119	7.619
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	409	439	475	375	392	424	363	382	414	441	474
Service Time	6.499	5.999	5.299	7.384	6.884	6.184	7.634	7.134	6.434	5.888	5.388
HCM Lane V/C Ratio	0.005	0.884	0.208	0.483	0.043	0.028	0.061	0.071	0.278	0.231	1.063
HCM Control Delay	11.5	48.5	12.3	21	12.3	11.4	13.3	12.9	14.7	13.3	88.1
HCM Lane LOS	B	E	B	C	B	B	B	B	B	B	F
HCM 95th-tile Q	0	9.3	0.8	2.5	0.1	0.1	0.2	0.2	1.1	0.9	15.8

HCM 6th TWSC
2: Sage Sparrow Ave. & W. Atherton Dr.

Timing Plan: EX PM
07/17/2023

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	198	18	12	134	13	5
Future Vol, veh/h	198	18	12	134	13	5
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	206	19	13	140	14	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	226	0	313
Stage 1	-	-	-	-	217
Stage 2	-	-	-	-	96
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1340	-	655
Stage 1	-	-	-	-	798
Stage 2	-	-	-	-	917
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1339	-	648
Mov Cap-2 Maneuver	-	-	-	-	648
Stage 1	-	-	-	-	797
Stage 2	-	-	-	-	908

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	705	-	-	1339	-
HCM Lane V/C Ratio	0.027	-	-	0.009	-
HCM Control Delay (s)	10.2	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
 3: Sparrowhawk St. & W. Atherton Dr.

Timing Plan: EX PM
 07/17/2023

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Vol, veh/h	131	70	10	81	66	10
Future Vol, veh/h	131	70	10	81	66	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	85	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	74	11	85	69	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	212	0	240
Stage 1	-	-	-	-	175
Stage 2	-	-	-	-	65
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1356	-	727
Stage 1	-	-	-	-	838
Stage 2	-	-	-	-	950
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1356	-	721
Mov Cap-2 Maneuver	-	-	-	-	721
Stage 1	-	-	-	-	838
Stage 2	-	-	-	-	942

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	743	-	-	1356	-
HCM Lane V/C Ratio	0.108	-	-	0.008	-
HCM Control Delay (s)	10.4	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Appendix D: Existing 2023 plus Project Conditions Capacity Analysis Worksheets

Intersection	
Intersection Delay, s/veh	80.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	273	165	7	120	86	313	2	271	106	331	187	109
Future Vol, veh/h	273	165	7	120	86	313	2	271	106	331	187	109
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	307	185	8	135	97	352	2	304	119	372	210	122
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	73.5	71.2	70.2	98.1
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	271	106	273	165	7	120	86	313	331	187
LT Vol	2	0	0	273	0	0	120	0	0	331	0
Through Vol	0	271	0	0	165	0	0	86	0	0	187
RT Vol	0	0	106	0	0	7	0	0	313	0	0
Lane Flow Rate	2	304	119	307	185	8	135	97	352	372	210
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.008	1.007	0.371	1.042	0.605	0.024	0.454	0.312	1.069	1.227	0.664
Departure Headway (Hd)	12.515	12.015	11.218	12.234	11.744	11.057	12.116	11.626	10.939	11.71	11.21
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	288	304	320	298	310	326	299	311	334	312	324
Service Time	10.215	9.715	9.015	9.96	9.46	8.76	9.822	9.322	8.622	9.41	8.91
HCM Lane V/C Ratio	0.007	1	0.372	1.03	0.597	0.025	0.452	0.312	1.054	1.192	0.648
HCM Control Delay	15.3	90.1	20.5	100.8	30.9	14	24.5	19.5	103.3	160.7	33.5
HCM Lane LOS	C	F	C	F	D	B	C	C	F	F	D
HCM 95th-tile Q	0	10.8	1.7	11.5	3.7	0.1	2.2	1.3	13	17	4.5

Intersection

Int Delay, s/veh 58.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	326	255	15	18	262	31	53	4	34	53	3	136
Future Vol, veh/h	326	255	15	18	262	31	53	4	34	53	3	136
Conflicting Peds, #/hr	0	0	3	3	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	413	323	19	23	332	39	67	5	43	67	4	172

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	371	0	0	345
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1184	-	-	1211
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1184	-	-	1208
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.3	0.5	285.5	208.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	88	1184	-	-	1208	-	-	190
HCM Lane V/C Ratio	1.309	0.349	-	-	0.019	-	-	1.279
HCM Control Delay (s)	285.5	9.7	-	-	8	-	-	208.6
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	8.5	1.6	-	-	0.1	-	-	13.4

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: EX + PROJ AM

07/13/2023

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	58	249	36	9	174	5	100	2	17	9	2	46
Future Vol, veh/h	58	249	36	9	174	5	100	2	17	9	2	46
Conflicting Peds, #/hr	0	0	1	1	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	100	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	319	46	12	223	6	128	3	22	12	3	59

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	366	0	0	628	744	184	559	764	115
Stage 1	-	-	-	-	-	-	491	491	-	250	250	-
Stage 2	-	-	-	-	-	-	137	253	-	309	514	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1336	-	-	1189	-	-	367	341	827	412	332	916
Stage 1	-	-	-	-	-	-	528	546	-	732	699	-
Stage 2	-	-	-	-	-	-	852	696	-	676	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1336	-	-	1188	-	-	324	319	826	379	310	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	324	319	-	379	310	-
Stage 1	-	-	-	-	-	-	498	515	-	692	692	-
Stage 2	-	-	-	-	-	-	786	689	-	619	504	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.4			22.6			10.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	355	1336	-	-	1188	-	-	709
HCM Lane V/C Ratio	0.43	0.056	-	-	0.01	-	-	0.103
HCM Control Delay (s)	22.6	7.9	-	-	8.1	-	-	10.7
HCM Lane LOS		C	A	-	-	A	-	B
HCM 95th %tile Q(veh)	2.1	0.2	-	-	0	-	-	0.3

HCM 6th TWSC
4: Airport Way & Airport Dwy.

Timing Plan: EX + PROJ AM

07/13/2023

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖			↑
Traffic Vol, veh/h	0	112	799	59	0	443
Future Vol, veh/h	0	112	799	59	0	443
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	-	-	-	-
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	122	868	64	0	482

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	900	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	337	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	337	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	337
HCM Lane V/C Ratio	-	-	0.361
HCM Control Delay (s)	-	-	21.6
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.6

HCM 6th TWSC
5: W. Atherton Dr. & W. Atherton Dwy. West

Timing Plan: EX + PROJ AM
07/13/2023

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	599	428	23	0	91
Future Vol, veh/h	0	599	428	23	0	91
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	0	651	465	25	0	99

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	755
HCM Lane V/C Ratio	-	-	-	0.131
HCM Control Delay (s)	-	-	-	10.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.5

HCM 6th TWSC
6: W. Atherton Dr. & W. Atherton Dwy. Central

Timing Plan: EX + PROJ AM

07/13/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	343	312	8	0	0
Future Vol, veh/h	0	343	312	8	0	0
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	0	373	339	9	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	274	187	5	0	1
Future Vol, veh/h	0	274	187	5	0	1
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	0	298	203	5	0	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	931
HCM Lane V/C Ratio	-	-	-	0.001
HCM Control Delay (s)	-	-	-	8.9
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection	
Intersection Delay, s/veh	55.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	172	26	11	119	36	228	2	337	147	311	399	250
Future Vol, veh/h	172	26	11	119	36	228	2	337	147	311	399	250
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	181	27	12	125	38	240	2	355	155	327	420	263
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	28.2	27.2	68	67.3
HCM LOS	D	D	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	337	147	172	26	11	119	36	228	311	399
LT Vol	2	0	0	172	0	0	119	0	0	311	0
Through Vol	0	337	0	0	26	0	0	36	0	0	399
RT Vol	0	0	147	0	0	11	0	0	228	0	0
Lane Flow Rate	2	355	155	181	27	12	125	38	240	327	420
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.006	1.029	0.419	0.6	0.087	0.035	0.396	0.115	0.681	0.893	1.088
Departure Headway (Hd)	10.926	10.438	9.755	11.925	11.439	10.758	11.392	10.903	10.219	9.817	9.328
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	328	348	371	304	315	335	317	330	355	370	391
Service Time	8.674	8.174	7.474	9.648	9.148	8.448	9.121	8.621	7.921	7.583	7.083
HCM Lane V/C Ratio	0.006	1.02	0.418	0.595	0.086	0.036	0.394	0.115	0.676	0.884	1.074
HCM Control Delay	13.7	89.6	19.3	31.1	15.2	13.8	21.4	15	32.2	56	102.5
HCM Lane LOS	B	F	C	D	C	B	C	B	D	F	F
HCM 95th-tile Q	0	12.2	2	3.6	0.3	0.1	1.8	0.4	4.8	8.9	14.8

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	256	219	18	13	176	24	13	3	6	49	3	121
Future Vol, veh/h	256	219	18	13	176	24	13	3	6	49	3	121
Conflicting Peds, #/hr	0	0	1	1	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	267	228	19	14	183	25	14	3	6	51	3	126

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	248	0	0	894	1009	125	874	1006	104
Stage 1	-	-	-	-	-	-	773	773	-	224	224	-
Stage 2	-	-	-	-	-	-	121	236	-	650	782	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1360	-	-	1315	-	-	236	239	902	244	240	931
Stage 1	-	-	-	-	-	-	358	407	-	758	717	-
Stage 2	-	-	-	-	-	-	870	708	-	424	403	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1360	-	-	1314	-	-	170	190	901	202	191	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	190	-	202	191	-
Stage 1	-	-	-	-	-	-	287	327	-	609	709	-
Stage 2	-	-	-	-	-	-	741	700	-	335	324	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.3			0.5			23.1			18.4		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	1360	-	-	1314	-	-	446
HCM Lane V/C Ratio	0.103	0.196	-	-	0.01	-	-	0.404
HCM Control Delay (s)	23.1	8.3	-	-	7.8	-	-	18.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.7	-	-	0	-	-	1.9

HCM 6th TWSC
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: EX + PROJ PM

07/13/2023

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	42	155	75	10	105	4	71	2	10	8	2	44
Future Vol, veh/h	42	155	75	10	105	4	71	2	10	8	2	44
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	100	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	163	79	11	111	4	75	2	11	8	2	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	115	0	0	242	0	0	370	428	121	306	465	58
Stage 1	-	-	-	-	-	-	291	291	-	135	135	-
Stage 2	-	-	-	-	-	-	79	137	-	171	330	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1472	-	-	1322	-	-	562	518	908	623	493	996
Stage 1	-	-	-	-	-	-	693	670	-	854	784	-
Stage 2	-	-	-	-	-	-	921	782	-	814	644	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1472	-	-	1322	-	-	519	498	908	596	474	996
Mov Cap-2 Maneuver	-	-	-	-	-	-	519	498	-	596	474	-
Stage 1	-	-	-	-	-	-	672	650	-	828	778	-
Stage 2	-	-	-	-	-	-	869	776	-	778	625	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.2			0.7			12.8			9.4		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	547	1472	-	-	1322	-	-	874
HCM Lane V/C Ratio	0.16	0.03	-	-	0.008	-	-	0.065
HCM Control Delay (s)	12.8	7.5	-	-	7.7	-	-	9.4
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.2

HCM 6th TWSC
4: Airport Way & Airport Dwy.

Timing Plan: EX + PROJ PM

07/13/2023

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↘			↑
Traffic Vol, veh/h	0	100	689	48	0	826
Future Vol, veh/h	0	100	689	48	0	826
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	-	-	-	-
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	109	749	52	0	898

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	775	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-
Pot Cap-1 Maneuver	0	398	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	398	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	398
HCM Lane V/C Ratio	-	-	0.273
HCM Control Delay (s)	-	-	17.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.1

HCM 6th TWSC
5: W. Atherton Dr. & W. Atherton Dwy. West

Timing Plan: EX + PROJ PM
07/13/2023

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	489	297	18	0	83
Future Vol, veh/h	0	489	297	18	0	83
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	0	532	323	20	0	90

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	172
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	842
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	842
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	842
HCM Lane V/C Ratio	-	-	-	0.107
HCM Control Delay (s)	-	-	-	9.8
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.4

HCM 6th TWSC
6: W. Atherton Dr. & W. Atherton Dwy. Central

Timing Plan: EX + PROJ PM

07/13/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	273	214	6	0	0
Future Vol, veh/h	0	273	214	6	0	0
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	0	297	233	7	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	173	118	4	0	1
Future Vol, veh/h	0	173	118	4	0	1
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	0	188	128	4	0	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	984
HCM Lane V/C Ratio	-	-	-	0.001
HCM Control Delay (s)	-	-	-	8.7
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0

Appendix E: Existing 2023 plus Project Conditions with Mitigations Capacity Analysis Worksheets

HCM 6th Signalized Intersection Summary
1: W. Atherton Dr. & Airport Way

Timing Plan: EX + PROJ w MIT AM

02/02/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	165	7	120	86	313	2	271	106	331	187	109
Future Volume (veh/h)	273	165	7	120	86	313	2	271	106	331	187	109
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		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	307	185	8	135	97	352	2	304	119	372	210	122
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	818	35	172	755	707	509	392	327	422	301	254
Arrive On Green	0.12	0.24	0.24	0.10	0.21	0.21	0.29	0.21	0.21	0.24	0.16	0.16
Sat Flow, veh/h	3456	3467	149	1781	3554	1561	1781	1870	1560	1781	1870	1579
Grp Volume(v), veh/h	307	94	99	135	97	352	2	304	119	372	210	122
Grp Sat Flow(s),veh/h/ln	1728	1777	1839	1781	1777	1561	1781	1870	1560	1781	1870	1579
Q Serve(g_s), s	7.0	3.5	3.5	6.1	1.8	13.1	0.1	12.5	5.3	16.5	8.7	4.2
Cycle Q Clear(g_c), s	7.0	3.5	3.5	6.1	1.8	13.1	0.1	12.5	5.3	16.5	8.7	4.2
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	416	419	434	172	755	707	509	392	327	422	301	254
V/C Ratio(X)	0.74	0.22	0.23	0.78	0.13	0.50	0.00	0.77	0.36	0.88	0.70	0.48
Avail Cap(c_a), veh/h	952	903	934	447	1718	1130	509	744	621	687	1225	1034
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	34.7	25.2	25.2	36.1	26.1	16.0	20.9	30.5	27.6	30.0	32.4	16.4
Incr Delay (d2), s/veh	2.6	0.3	0.3	7.6	0.1	0.5	0.0	3.3	0.7	7.7	2.9	1.4
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	2.9	1.4	1.5	2.8	0.7	4.2	0.0	5.7	1.9	7.5	4.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	25.4	25.5	43.6	26.1	16.5	20.9	33.8	28.3	37.8	35.3	17.8
LnGrp LOS	D	C	C	D	C	B	C	C	C	D	D	B
Approach Vol, veh/h		500			584			425			704	
Approach Delay, s/veh		32.7			24.4			32.2			33.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.9	21.6	12.4	23.8	27.9	17.6	14.3	21.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+1), s	18.5	14.5	8.1	5.5	2.1	10.7	9.0	15.1				
Green Ext Time (p_c), s	0.9	1.9	0.2	1.0	0.0	1.6	0.8	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			30.7									
HCM 6th LOS			C									

Intersection

Int Delay, s/veh 6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗				↖	↖		↖
Traffic Vol, veh/h	326	255	15	0	315	35	0	0	47	56	0	136
Future Vol, veh/h	326	255	15	0	315	35	0	0	47	56	0	136
Conflicting Peds, #/hr	0	0	3	3	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	200	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	413	323	19	0	399	44	0	0	59	71	0	172

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	443	0	0	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	-
Pot Cap-1 Maneuver	1113	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1113	-	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.5	0	9.6	23.3
HCM LOS			A	C

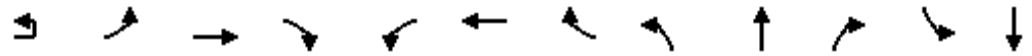
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	837	1113	-	-	-	-	142	782
HCM Lane V/C Ratio	0.071	0.371	-	-	-	-	0.499	0.22
HCM Control Delay (s)	9.6	10.1	-	-	-	-	53.3	10.9
HCM Lane LOS	A	B	-	-	-	-	F	B
HCM 95th %tile Q(veh)	0.2	1.7	-	-	-	-	2.4	0.8

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: EX + PROJ w MIT AM

02/02/2024



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↕		↕	↕			↕			↕
Traffic Volume (veh/h)	13	58	249	39	27	156	5	144	2	17	9	2
Future Volume (veh/h)	13	58	249	39	27	156	5	144	2	17	9	2
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		74	319	50	35	200	6	185	3	22	12	3
Peak Hour Factor		0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		116	524	81	69	507	15	758	19	75	168	83
Arrive On Green		0.06	0.17	0.17	0.04	0.14	0.14	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h		1781	3082	478	1781	3522	105	1205	37	145	160	162
Grp Volume(v), veh/h		74	183	186	35	101	105	210	0	0	74	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1783	1781	1777	1851	1387	0	0	1587	0
Q Serve(g_s), s		2.0	4.6	4.7	0.9	2.5	2.5	2.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s		2.0	4.6	4.7	0.9	2.5	2.5	3.9	0.0	0.0	1.1	0.0
Prop In Lane		1.00		0.27	1.00		0.06	0.88		0.10	0.16	
Lane Grp Cap(c), veh/h		116	302	303	69	256	266	852	0	0	901	0
V/C Ratio(X)		0.64	0.60	0.61	0.51	0.39	0.40	0.25	0.00	0.00	0.08	0.00
Avail Cap(c_a), veh/h		183	657	659	183	657	685	852	0	0	901	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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		22.2	18.7	18.7	22.9	18.9	18.9	6.6	0.0	0.0	6.0	0.0
Incr Delay (d2), s/veh		5.8	1.9	2.0	5.7	1.0	1.0	0.7	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.9	1.7	1.8	0.4	0.9	1.0	1.1	0.0	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		28.0	20.6	20.7	28.6	19.9	19.9	7.3	0.0	0.0	6.2	0.0
LnGrp LOS		C	C	C	C	B	B	A	A	A	A	A
Approach Vol, veh/h			443			241			210			74
Approach Delay, s/veh			21.9			21.1			7.3			6.2
Approach LOS			C			C			A			A
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		29.5	6.4	12.8		29.5	7.7	11.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.0	5.0	18.0		25.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		5.9	2.9	6.7		3.1	4.0	4.5				
Green Ext Time (p_c), s		1.2	0.0	1.4		0.3	0.0	0.8				

Intersection Summary												
HCM 6th Ctrl Delay			17.3									
HCM 6th LOS			B									

Notes

User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: EX + PROJ w MIT AM

02/02/2024

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	46
Future Volume (veh/h)	46
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	59
Peak Hour Factor	0.78
Percent Heavy Veh, %	2
Cap, veh/h	650
Arrive On Green	0.51
Sat Flow, veh/h	1265
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.80
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

HCM 6th TWSC
4: Airport Way & Airport Dwy.

Timing Plan: EX + PROJ w MIT AM

02/02/2024

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	112	799	59	0	443
Future Vol, veh/h	0	112	799	59	0	443
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	-	-	-	-
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	122	868	64	0	482

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	466	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	543	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	543	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	543
HCM Lane V/C Ratio	-	-	0.224
HCM Control Delay (s)	-	-	13.5
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.9

HCM 6th TWSC
 5: W. Atherton Dr. & W. Atherton Dwy. West

Timing Plan: EX + PROJ w MIT AM

02/02/2024

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	599	428	23	0	91
Future Vol, veh/h	0	599	428	23	0	91
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	0	651	465	25	0	99

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-


































Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	644
HCM Lane V/C Ratio	-	-	-	0.154
HCM Control Delay (s)	-	-	-	11.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.5

HCM 6th Signalized Intersection Summary
1: W. Atherton Dr. & Airport Way

Timing Plan: EX + PROJ w MIT PM

02/02/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 	 	 		 	 	 	 
Traffic Volume (veh/h)	172	26	11	119	36	228	2	337	147	311	399	250
Future Volume (veh/h)	172	26	11	119	36	228	2	337	147	311	399	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	27	12	125	38	240	2	355	155	327	420	263
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	389	161	164	587	610	308	459	389	392	547	464
Arrive On Green	0.09	0.16	0.16	0.09	0.17	0.17	0.17	0.25	0.25	0.22	0.29	0.29
Sat Flow, veh/h	3456	2446	1015	1781	3554	1582	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	181	19	20	125	38	240	2	355	155	327	420	263
Grp Sat Flow(s),veh/h/ln	1728	1777	1684	1781	1777	1582	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.2	0.6	0.6	4.4	0.6	7.0	0.1	11.2	5.2	11.1	13.0	6.1
Cycle Q Clear(g_c), s	3.2	0.6	0.6	4.4	0.6	7.0	0.1	11.2	5.2	11.1	13.0	6.1
Prop In Lane	1.00		0.60	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	297	282	267	164	587	610	308	459	389	392	547	464
V/C Ratio(X)	0.61	0.07	0.07	0.76	0.06	0.39	0.01	0.77	0.40	0.83	0.77	0.57
Avail Cap(c_a), veh/h	1224	1160	1100	575	2209	1332	308	957	811	883	1575	1334
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	28.0	22.7	22.8	28.2	22.4	14.2	21.8	22.3	20.0	23.7	20.5	8.8
Incr Delay (d2), s/veh	2.0	0.1	0.1	7.1	0.0	0.4	0.0	2.8	0.7	4.7	2.3	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	1.3	0.2	0.2	2.0	0.2	2.1	0.0	4.7	1.7	4.7	5.3	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.0	22.8	22.9	35.2	22.4	14.6	21.8	25.1	20.7	28.4	22.8	9.9
LnGrp LOS	C	C	C	D	C	B	C	C	C	C	C	A
Approach Vol, veh/h		220			403			512			1010	
Approach Delay, s/veh		28.8			21.7			23.8			21.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.5	20.1	10.4	14.6	15.5	23.1	10.0	15.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	13.1	13.2	6.4	2.6	2.1	15.0	5.2	9.0				
Green Ext Time (p_c), s	0.9	2.4	0.2	0.2	0.0	3.6	0.5	1.0				
Intersection Summary												
HCM 6th Ctrl Delay				22.7								
HCM 6th LOS				C								

Intersection

Int Delay, s/veh 4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗				↖	↖		↖
Traffic Vol, veh/h	256	219	18	0	189	27	0	0	9	51	0	121
Future Vol, veh/h	256	219	18	0	189	27	0	0	9	51	0	121
Conflicting Peds, #/hr	0	0	1	1	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	200	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	267	228	19	0	197	28	0	0	9	53	0	126

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	225	0	0	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	-
Pot Cap-1 Maneuver	1341	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1341	-	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

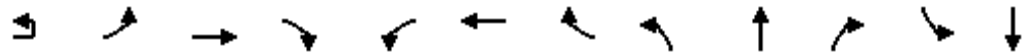
Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0	9	12.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	901	1341	-	-	-	-	312	918
HCM Lane V/C Ratio	0.01	0.199	-	-	-	-	0.17	0.137
HCM Control Delay (s)	9	8.3	-	-	-	-	18.9	9.5
HCM Lane LOS	A	A	-	-	-	-	C	A
HCM 95th %tile Q(veh)	0	0.7	-	-	-	-	0.6	0.5

HCM 6th Signalized Intersection Summary
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: EX + PROJ w MIT PM

02/02/2024



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	3	42	155	78	23	92	4	84	2	10	8	2
Future Volume (veh/h)	3	42	155	78	23	92	4	84	2	10	8	2
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		44	163	82	24	97	4	88	2	11	8	2
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		83	308	148	51	397	16	801	25	83	161	83
Arrive On Green		0.05	0.13	0.13	0.03	0.11	0.11	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h		1781	2328	1118	1781	3479	143	1200	47	152	132	152
Grp Volume(v), veh/h		44	123	122	24	49	52	101	0	0	56	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1669	1781	1777	1845	1399	0	0	1591	0
Q Serve(g_s), s		1.1	2.9	3.2	0.6	1.2	1.2	0.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s		1.1	2.9	3.2	0.6	1.2	1.2	1.4	0.0	0.0	0.7	0.0
Prop In Lane		1.00		0.67	1.00		0.08	0.87		0.11	0.14	
Lane Grp Cap(c), veh/h		83	235	221	51	203	210	909	0	0	957	0
V/C Ratio(X)		0.53	0.52	0.56	0.47	0.24	0.25	0.11	0.00	0.00	0.06	0.00
Avail Cap(c_a), veh/h		194	697	655	194	697	724	909	0	0	957	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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		21.4	18.6	18.6	21.9	18.5	18.5	5.0	0.0	0.0	4.9	0.0
Incr Delay (d2), s/veh		5.1	1.8	2.2	6.5	0.6	0.6	0.2	0.0	0.0	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
%ile BackOfQ(50%),veh/ln		0.5	1.1	1.1	0.3	0.4	0.4	0.4	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		26.5	20.3	20.8	28.5	19.1	19.1	5.3	0.0	0.0	5.0	0.0
LnGrp LOS		C	C	C	C	B	B	A	A	A	A	A
Approach Vol, veh/h			289			125			101			56
Approach Delay, s/veh			21.5			20.9			5.3			5.0
Approach LOS			C			C			A			A
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		29.5	5.8	10.6		29.5	6.6	9.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.0	5.0	18.0		25.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		3.4	2.6	5.2		2.7	3.1	3.2				
Green Ext Time (p_c), s		0.5	0.0	1.0		0.2	0.0	0.3				

Intersection Summary

HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: EX + PROJ w MIT PM

02/02/2024

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	44
Future Volume (veh/h)	44
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	46
Peak Hour Factor	0.95
Percent Heavy Veh, %	2
Cap, veh/h	712
Arrive On Green	0.54
Sat Flow, veh/h	1307
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.82
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

HCM 6th TWSC
4: Airport Way & Airport Dwy.

Timing Plan: EX + PROJ w MIT PM

02/02/2024

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	100	689	48	0	826
Future Vol, veh/h	0	100	689	48	0	826
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	-	-	-	-
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	109	749	52	0	898

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	401	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	599	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	599	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	599
HCM Lane V/C Ratio	-	-	0.181
HCM Control Delay (s)	-	-	12.3
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

HCM 6th TWSC
 5: W. Atherton Dr. & W. Atherton Dwy. West

Timing Plan: EX + PROJ w MIT PM

02/02/2024

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	489	297	18	0	83
Future Vol, veh/h	0	489	297	18	0	83
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	0	532	323	20	0	90

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.8
HCM LOS			B



























Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	716
HCM Lane V/C Ratio	-	-	-	0.126
HCM Control Delay (s)	-	-	-	10.8
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.4

Appendix F: Cumulative 2040 Conditions Capacity Analysis Worksheets

HCM 6th Signalized Intersection Summary
 1: W. Atherton Dr. & Airport Way

Timing Plan: CUM AM

01/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 						 	
Traffic Volume (veh/h)	394	218	10	10	110	270	3	444	58	75	407	157
Future Volume (veh/h)	394	218	10	10	110	270	3	444	58	75	407	157
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	428	237	11	11	120	293	3	483	63	82	442	171
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	553	1332	62	24	425	374	128	570	476	108	550	465
Arrive On Green	0.16	0.39	0.39	0.01	0.24	0.24	0.07	0.30	0.30	0.06	0.29	0.29
Sat Flow, veh/h	3456	3455	160	1781	1777	1561	1781	1870	1562	1781	1870	1582
Grp Volume(v), veh/h	428	121	127	11	120	293	3	483	63	82	442	171
Grp Sat Flow(s),veh/h/ln	1728	1777	1837	1781	1777	1561	1781	1870	1562	1781	1870	1582
Q Serve(g_s), s	9.1	3.4	3.5	0.5	4.2	13.5	0.1	18.5	2.2	3.5	16.7	4.0
Cycle Q Clear(g_c), s	9.1	3.4	3.5	0.5	4.2	13.5	0.1	18.5	2.2	3.5	16.7	4.0
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	553	685	709	24	425	374	128	570	476	108	550	465
V/C Ratio(X)	0.77	0.18	0.18	0.45	0.28	0.78	0.02	0.85	0.13	0.76	0.80	0.37
Avail Cap(c_a), veh/h	1015	963	996	477	917	805	244	794	663	733	1307	1105
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	15.5	15.5	37.5	23.8	27.3	33.0	25.0	19.3	35.4	25.0	7.9
Incr Delay (d2), s/veh	2.4	0.1	0.1	12.6	0.4	3.7	0.1	6.2	0.1	10.2	2.8	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	3.7	1.3	1.3	0.3	1.7	4.9	0.1	8.4	0.8	1.7	7.2	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.2	15.6	15.6	50.1	24.1	30.9	33.1	31.2	19.4	45.5	27.8	8.4
LnGrp LOS	C	B	B	D	C	C	C	C	B	D	C	A
Approach Vol, veh/h		676			424			549			695	
Approach Delay, s/veh		26.7			29.5			29.8			25.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	27.8	5.5	34.0	10.0	27.0	16.8	22.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	5.5	20.5	2.5	5.5	2.1	18.7	11.1	15.5				
Green Ext Time (p_c), s	0.2	2.4	0.0	1.3	0.0	3.4	1.2	2.4				
Intersection Summary												
HCM 6th Ctrl Delay				27.5								
HCM 6th LOS				C								

HCM 6th TWSC
2: Sage Sparrow Ave. & W. Atherton Dr.

Timing Plan: CUM AM
01/31/2024

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	320	22	25	313	76	48
Future Vol, veh/h	320	22	25	313	76	48
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	348	24	27	340	83	52

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	375	0	587
Stage 1	-	-	-	-	363
Stage 2	-	-	-	-	224
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1180	-	441
Stage 1	-	-	-	-	674
Stage 2	-	-	-	-	792
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1177	-	430
Mov Cap-2 Maneuver	-	-	-	-	430
Stage 1	-	-	-	-	672
Stage 2	-	-	-	-	774

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	527	-	-	1177	-
HCM Lane V/C Ratio	0.256	-	-	0.023	-
HCM Control Delay (s)	14.2	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0.1	-

HCM 6th TWSC
 3: Sparrowhawk St. & W. Atherton Dr.

Timing Plan: CUM AM
 01/31/2024

Intersection						
Int Delay, s/veh	3.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	323	45	13	203	136	25
Future Vol, veh/h	323	45	13	203	136	25
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	85	-	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	351	49	14	221	148	27

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	401	0	516
Stage 1	-	-	-	-	377
Stage 2	-	-	-	-	139
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1154	-	489
Stage 1	-	-	-	-	663
Stage 2	-	-	-	-	873
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1153	-	483
Mov Cap-2 Maneuver	-	-	-	-	483
Stage 1	-	-	-	-	662
Stage 2	-	-	-	-	863
































Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	515	-	-	1153	-
HCM Lane V/C Ratio	0.34	-	-	0.012	-
HCM Control Delay (s)	15.5	-	-	8.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.5	-	-	0	-

HCM 6th Signalized Intersection Summary
 1: W. Atherton Dr. & Airport Way

Timing Plan: CUM PM

01/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 		 	 	 	 
Traffic Volume (veh/h)	248	23	16	30	38	157	3	532	136	140	691	361
Future Volume (veh/h)	248	23	16	30	38	157	3	532	136	140	691	361
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	270	25	17	33	41	171	3	578	148	152	751	392
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	391	494	303	60	275	244	7	694	588	197	893	757
Arrive On Green	0.11	0.23	0.23	0.03	0.15	0.15	0.00	0.37	0.37	0.11	0.48	0.48
Sat Flow, veh/h	3456	2113	1297	1781	1777	1582	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	270	21	21	33	41	171	3	578	148	152	751	392
Grp Sat Flow(s),veh/h/ln	1728	1777	1634	1781	1777	1582	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.4	0.6	0.7	1.3	1.4	7.4	0.1	20.2	4.6	6.0	25.2	6.7
Cycle Q Clear(g_c), s	5.4	0.6	0.7	1.3	1.4	7.4	0.1	20.2	4.6	6.0	25.2	6.7
Prop In Lane	1.00		0.79	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	416	382	60	275	244	7	694	588	197	893	757
V/C Ratio(X)	0.69	0.05	0.06	0.55	0.15	0.70	0.42	0.83	0.25	0.77	0.84	0.52
Avail Cap(c_a), veh/h	1084	1028	945	509	978	871	261	847	718	782	1395	1182
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	30.6	21.3	21.3	34.1	26.3	28.8	35.6	20.5	15.7	31.0	16.4	3.8
Incr Delay (d2), s/veh	2.2	0.0	0.1	7.7	0.2	3.6	34.1	6.0	0.2	6.3	2.8	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	2.2	0.2	0.3	0.7	0.6	2.8	0.1	8.8	1.5	2.7	9.6	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	21.3	21.4	41.8	26.5	32.4	69.7	26.5	15.9	37.3	19.2	4.4
LnGrp LOS	C	C	C	D	C	C	E	C	B	D	B	A
Approach Vol, veh/h		312			245			729			1295	
Approach Delay, s/veh		31.3			32.7			24.5			16.8	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	31.1	6.9	21.3	4.8	38.8	12.6	15.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	8.0	22.2	3.3	2.7	2.1	27.2	7.4	9.4				
Green Ext Time (p_c), s	0.4	3.0	0.0	0.2	0.0	7.1	0.8	1.2				
Intersection Summary												
HCM 6th Ctrl Delay				22.3								
HCM 6th LOS				C								

HCM 6th TWSC
 2: Sage Sparrow Ave. & W. Atherton Dr.

Timing Plan: CUM PM
 01/31/2024

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	286	26	17	193	19	7
Future Vol, veh/h	286	26	17	193	19	7
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	311	28	18	210	21	8

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	340	0	467
Stage 1	-	-	-	-	326
Stage 2	-	-	-	-	141
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1216	-	525
Stage 1	-	-	-	-	704
Stage 2	-	-	-	-	871
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1215	-	517
Mov Cap-2 Maneuver	-	-	-	-	517
Stage 1	-	-	-	-	703
Stage 2	-	-	-	-	858

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	577	-	-	1215	-
HCM Lane V/C Ratio	0.049	-	-	0.015	-
HCM Control Delay (s)	11.6	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 6th TWSC
 3: Sparrowhawk St. & W. Atherton Dr.

Timing Plan: CUM PM
 01/31/2024

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	189	101	14	117	95	14
Future Vol, veh/h	189	101	14	117	95	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	85	-	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	205	110	15	127	103	15

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	315	0	354
Stage 1	-	-	-	-	260
Stage 2	-	-	-	-	94
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1242	-	618
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	919
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1242	-	611
Mov Cap-2 Maneuver	-	-	-	-	611
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	908

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	12
HCM LOS			B
































Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	635	-	-	1242	-
HCM Lane V/C Ratio	0.187	-	-	0.012	-
HCM Control Delay (s)	12	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Appendix G: Cumulative 2040 plus Project Conditions Capacity Analysis Worksheets

HCM 6th Signalized Intersection Summary
 1: W. Atherton Dr. & Airport Way

Timing Plan: CUM + PROJ AM

01/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 		 	 	 	 
Traffic Volume (veh/h)	394	232	10	123	120	396	3	407	124	354	312	157
Future Volume (veh/h)	394	232	10	123	120	396	3	407	124	354	312	157
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		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	428	252	11	134	130	430	3	442	135	385	339	171
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	482	1144	50	159	497	437	436	431	359	397	390	330
Arrive On Green	0.14	0.33	0.33	0.09	0.28	0.28	0.24	0.23	0.23	0.22	0.21	0.21
Sat Flow, veh/h	3456	3465	151	1781	1777	1562	1781	1870	1560	1781	1870	1580
Grp Volume(v), veh/h	428	129	134	134	130	430	3	442	135	385	339	171
Grp Sat Flow(s),veh/h/ln	1728	1777	1839	1781	1777	1562	1781	1870	1560	1781	1870	1580
Q Serve(g_s), s	17.2	7.4	7.5	10.5	8.0	38.6	0.2	32.5	10.3	30.2	24.7	10.1
Cycle Q Clear(g_c), s	17.2	7.4	7.5	10.5	8.0	38.6	0.2	32.5	10.3	30.2	24.7	10.1
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	482	587	607	159	497	437	436	431	359	397	390	330
V/C Ratio(X)	0.89	0.22	0.22	0.84	0.26	0.98	0.01	1.03	0.38	0.97	0.87	0.52
Avail Cap(c_a), veh/h	551	587	607	259	497	437	436	431	359	397	709	599
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	59.7	34.1	34.2	63.3	39.5	50.5	40.3	54.3	45.8	54.4	54.0	27.4
Incr Delay (d2), s/veh	14.8	0.2	0.2	12.8	0.3	38.8	0.0	50.4	0.7	36.9	6.0	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	8.4	3.2	3.3	5.2	3.5	19.3	0.1	21.0	4.0	17.4	12.1	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.5	34.3	34.4	76.1	39.8	89.3	40.4	104.7	46.5	91.3	60.0	28.6
LnGrp LOS	E	C	C	E	D	F	D	F	D	F	E	C
Approach Vol, veh/h		691			694			580			895	
Approach Delay, s/veh		59.2			77.5			90.8			67.5	
Approach LOS		E			E			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.0	37.0	17.1	51.1	39.0	34.0	24.2	44.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	32.2	34.5	12.5	9.5	2.2	26.7	19.2	40.6				
Green Ext Time (p_c), s	0.0	0.0	0.2	1.4	0.0	2.5	0.5	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				72.6								
HCM 6th LOS				E								

Intersection

Int Delay, s/veh 49.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	326	353	22	26	358	31	76	4	49	53	3	136
Future Vol, veh/h	326	353	22	26	358	31	76	4	49	53	3	136
Conflicting Peds, #/hr	0	0	3	3	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	100	-	-	100	-	-	-	-	-	-	-	-
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	354	384	24	28	389	34	83	4	53	58	3	148

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	423	0	0	411
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1133	-	-	1144
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1133	-	-	1141
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.5	0.5	\$ 334.3	129
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	96	1133	-	-	1141	-	-	198
HCM Lane V/C Ratio	1.461	0.313	-	-	0.025	-	-	1.054
HCM Control Delay (s)	\$ 334.3	9.6	-	-	8.2	-	-	129
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	10.5	1.3	-	-	0.1	-	-	9.5

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: CUM + PROJ AM

01/31/2024

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	58	348	50	13	236	5	142	2	25	9	2	46
Future Vol, veh/h	58	348	50	13	236	5	142	2	25	9	2	46
Conflicting Peds, #/hr	0	0	1	1	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	100	-	-	85	-	-	-	-	-	-	-	-
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	63	378	54	14	257	5	154	2	27	10	2	50

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	262	0	0	433	0	0	690	822	217	604	847	131
Stage 1	-	-	-	-	-	-	532	532	-	288	288	-
Stage 2	-	-	-	-	-	-	158	290	-	316	559	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1299	-	-	1123	-	-	331	307	787	382	297	894
Stage 1	-	-	-	-	-	-	499	524	-	695	672	-
Stage 2	-	-	-	-	-	-	828	671	-	670	509	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1299	-	-	1122	-	-	296	289	786	350	279	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	296	289	-	350	279	-
Stage 1	-	-	-	-	-	-	475	498	-	662	664	-
Stage 2	-	-	-	-	-	-	769	663	-	613	484	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.4			29.4			10.9		
HCM LOS							D			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	326	1299	-	-	1122	-	-	676
HCM Lane V/C Ratio	0.563	0.049	-	-	0.013	-	-	0.092
HCM Control Delay (s)	29.4	7.9	-	-	8.2	-	-	10.9
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3.3	0.2	-	-	0	-	-	0.3

HCM 6th TWSC
4: Airport Way & Airport Dwy.

Timing Plan: CUM + PROJ AM

01/31/2024

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	112	1139	59	0	639
Future Vol, veh/h	0	112	1139	59	0	639
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	-	-	-	-
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	122	1238	64	0	695

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	651	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	411	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	411	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	411
HCM Lane V/C Ratio	-	-	0.296
HCM Control Delay (s)	-	-	17.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.2

HCM 6th TWSC
 5: W. Atherton Dr. & W. Atherton Dwy. West

Timing Plan: CUM + PROJ AM

01/31/2024

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	705	547	23	0	91
Future Vol, veh/h	0	705	547	23	0	91
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	0	766	595	25	0	99

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	310
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	585
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	585
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	585
HCM Lane V/C Ratio	-	-	-	0.169
HCM Control Delay (s)	-	-	-	12.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.6

HCM 6th TWSC
6: W. Atherton Dr. & W. Atherton Dwy. Central

Timing Plan: CUM + PROJ AM

01/31/2024

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	456	416	8	0	0
Future Vol, veh/h	0	456	416	8	0	0
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	0	496	452	9	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	381	253	5	0	1
Future Vol, veh/h	0	381	253	5	0	1
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	0	414	275	5	0	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	882
HCM Lane V/C Ratio	-	-	-	0.001
HCM Control Delay (s)	-	-	-	9.1
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0

HCM 6th Signalized Intersection Summary
 1: W. Atherton Dr. & Airport Way

Timing Plan: CUM + PROJ PM

01/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	248	33	16	128	48	276	3	500	189	354	611	361
Future Volume (veh/h)	248	33	16	128	48	276	3	500	189	354	611	361
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	270	36	17	139	52	300	3	543	205	385	664	392
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	345	540	238	169	391	349	226	536	455	417	737	625
Arrive On Green	0.10	0.23	0.23	0.09	0.22	0.22	0.13	0.29	0.29	0.23	0.39	0.39
Sat Flow, veh/h	3456	2399	1056	1781	1777	1583	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	270	26	27	139	52	300	3	543	205	385	664	392
Grp Sat Flow(s),veh/h/ln	1728	1777	1678	1781	1777	1583	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.6	1.3	1.4	8.7	2.7	20.7	0.2	32.5	12.0	23.9	37.8	15.9
Cycle Q Clear(g_c), s	8.6	1.3	1.4	8.7	2.7	20.7	0.2	32.5	12.0	23.9	37.8	15.9
Prop In Lane	1.00		0.63	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	345	400	378	169	391	349	226	536	455	417	737	625
V/C Ratio(X)	0.78	0.06	0.07	0.82	0.13	0.86	0.01	1.01	0.45	0.92	0.90	0.63
Avail Cap(c_a), veh/h	686	651	614	322	619	552	226	536	455	495	883	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	49.8	34.5	34.6	50.3	35.5	42.5	43.3	40.4	33.1	42.4	32.3	13.7
Incr Delay (d2), s/veh	3.9	0.1	0.1	9.5	0.2	8.0	0.0	41.9	0.7	21.0	10.9	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	3.8	0.6	0.6	4.2	1.1	8.5	0.1	20.6	4.5	12.6	18.4	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	34.6	34.6	59.8	35.6	50.5	43.3	82.3	33.8	63.4	43.2	14.9
LnGrp LOS	D	C	C	E	D	D	D	F	C	E	D	B
Approach Vol, veh/h		323			491			751			1441	
Approach Delay, s/veh		50.6			51.6			68.9			40.9	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	37.0	15.3	30.0	18.9	49.1	15.8	29.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	25.9	34.5	10.7	3.4	2.2	39.8	10.6	22.7				
Green Ext Time (p_c), s	0.6	0.0	0.2	0.2	0.0	4.9	0.7	1.8				

Intersection Summary

HCM 6th Ctrl Delay	50.7
HCM 6th LOS	D

Intersection

Int Delay, s/veh 7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↕		↙	↕			↕			↕	
Traffic Vol, veh/h	256	307	26	18	235	24	19	3	8	49	3	121
Future Vol, veh/h	256	307	26	18	235	24	19	3	8	49	3	121
Conflicting Peds, #/hr	0	0	1	1	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	100	-	-	100	-	-	-	-	-	-	-	-
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	278	334	28	20	255	26	21	3	9	53	3	132

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	281	0	0	363
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1278	-	-	1192
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1278	-	-	1191
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.7	0.5	33.6	26.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	1278	-	-	1191	-	-	354
HCM Lane V/C Ratio	0.206	0.218	-	-	0.016	-	-	0.531
HCM Control Delay (s)	33.6	8.6	-	-	8.1	-	-	26.1
HCM Lane LOS	D	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.7	0.8	-	-	0.1	-	-	3

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗			↔			↔	
Traffic Vol, veh/h	42	213	106	14	141	4	100	2	14	8	2	44
Future Vol, veh/h	42	213	106	14	141	4	100	2	14	8	2	44
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	100	-	-	85	-	-	-	-	-	-	-	-
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	46	232	115	15	153	4	109	2	15	9	2	48

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	157	0	0	347
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1420	-	-	1209
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1420	-	-	1209
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.7	16.2	9.8
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	448	1420	-	-	1209	-	-	812
HCM Lane V/C Ratio	0.281	0.032	-	-	0.013	-	-	0.072
HCM Control Delay (s)	16.2	7.6	-	-	8	-	-	9.8
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0	-	-	0.2

HCM 6th TWSC
4: Airport Way & Airport Dwy.

Timing Plan: CUM + PROJ PM

01/31/2024

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	100	977	48	0	1191
Future Vol, veh/h	0	100	977	48	0	1191
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	-	-	-	-
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	109	1062	52	0	1295

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	557	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	474	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	474	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	474
HCM Lane V/C Ratio	-	-	0.229
HCM Control Delay (s)	-	-	14.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.9

HCM 6th TWSC
5: W. Atherton Dr. & W. Atherton Dwy. West

Timing Plan: CUM + PROJ PM
01/31/2024

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	583	364	18	0	83
Future Vol, veh/h	0	583	364	18	0	83
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	0	634	396	20	0	90

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	679
HCM Lane V/C Ratio	-	-	-	0.133
HCM Control Delay (s)	-	-	-	11.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.5

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	362	279	6	0	0
Future Vol, veh/h	0	362	279	6	0	0
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	0	393	303	7	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	235	158	4	0	1
Future Vol, veh/h	0	235	158	4	0	1
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	0	255	172	4	0	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	953
HCM Lane V/C Ratio	-	-	-	0.001
HCM Control Delay (s)	-	-	-	8.8
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0

Appendix H: Cumulative 2040 plus Project Conditions with Mitigations Capacity Analysis Worksheets

HCM 6th Signalized Intersection Summary
 1: W. Atherton Dr. & Airport Way

Timing Plan: CUM + PROJ w MIT AM

02/01/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↖	↖	↑↑	↖	↖	↑↔		↖	↑	↖
Traffic Volume (veh/h)	394	232	10	123	120	396	3	407	124	354	312	157
Future Volume (veh/h)	394	232	10	123	120	396	3	407	124	354	312	157
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		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	428	252	11	134	130	430	3	442	135	385	339	171
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	511	553	458	165	855	749	399	558	169	420	412	348
Arrive On Green	0.15	0.30	0.30	0.09	0.24	0.24	0.22	0.21	0.21	0.24	0.22	0.22
Sat Flow, veh/h	3456	1870	1549	1781	3554	1561	1781	2676	810	1781	1870	1581
Grp Volume(v), veh/h	428	252	11	134	130	430	3	292	285	385	339	171
Grp Sat Flow(s),veh/h/ln	1728	1870	1549	1781	1777	1561	1781	1777	1709	1781	1870	1581
Q Serve(g_s), s	13.0	11.8	0.3	7.9	3.1	21.4	0.1	16.7	17.0	22.7	18.6	7.2
Cycle Q Clear(g_c), s	13.0	11.8	0.3	7.9	3.1	21.4	0.1	16.7	17.0	22.7	18.6	7.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.47	1.00		1.00
Lane Grp Cap(c), veh/h	511	553	458	165	855	749	399	370	356	420	412	348
V/C Ratio(X)	0.84	0.46	0.02	0.81	0.15	0.57	0.01	0.79	0.80	0.92	0.82	0.49
Avail Cap(c_a), veh/h	723	722	598	340	1305	947	399	537	517	522	931	786
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	44.6	30.8	8.5	47.9	32.2	20.3	32.4	40.3	40.4	40.1	39.9	18.1
Incr Delay (d2), s/veh	6.1	0.6	0.0	9.2	0.1	0.7	0.0	4.9	5.7	18.6	4.2	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	5.8	5.2	0.2	3.8	1.3	7.3	0.1	7.6	7.5	11.7	8.7	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	31.4	8.5	57.0	32.3	21.0	32.4	45.2	46.1	58.6	44.1	19.2
LnGrp LOS	D	C	A	E	C	C	C	D	D	E	D	B
Approach Vol, veh/h		691			694			580			895	
Approach Delay, s/veh		42.9			30.1			45.6			45.6	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.9	26.9	14.5	36.3	28.6	28.2	20.4	30.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	24.7	19.0	9.9	13.8	2.1	20.6	15.0	23.4				
Green Ext Time (p_c), s	0.7	2.8	0.2	1.3	0.0	2.6	0.9	2.1				

Intersection Summary

HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

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	326	353	22	0	434	35	0	0	68	56	0	136
Future Vol, veh/h	326	353	22	0	434	35	0	0	68	56	0	136
Conflicting Peds, #/hr	0	0	3	3	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	200	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
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	354	384	24	0	472	38	0	0	74	61	0	148

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	510	0	0	-	-	0	-	-	207	1391	-	255
Stage 1	-	-	-	-	-	-	-	-	-	491	-	-
Stage 2	-	-	-	-	-	-	-	-	-	900	-	-
Critical Hdwy	4.14	-	-	-	-	-	-	-	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	-	-	-	-	-	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1051	-	-	0	-	0	0	0	799	102	0	744
Stage 1	-	-	-	0	-	0	0	0	-	528	0	-
Stage 2	-	-	-	0	-	0	0	0	-	300	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1051	-	-	-	-	-	-	-	797	68	-	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	161	-	-
Stage 1	-	-	-	-	-	-	-	-	-	350	-	-
Stage 2	-	-	-	-	-	-	-	-	-	181	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.7			0			10			19.6		
HCM LOS							B			C		

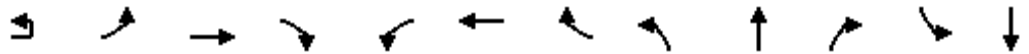
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	797	1051	-	-	-	-	161	744
HCM Lane V/C Ratio	0.093	0.337	-	-	-	-	0.378	0.199
HCM Control Delay (s)	10	10.2	-	-	-	-	40.4	11
HCM Lane LOS	B	B	-	-	-	-	E	B
HCM 95th %tile Q(veh)	0.3	1.5	-	-	-	-	1.6	0.7

HCM 6th Signalized Intersection Summary

Timing Plan: CUM + PROJ w MIT AM

3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

02/01/2024



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↕		↔	↕			↕			↕
Traffic Volume (veh/h)	19	58	348	53	39	210	5	203	2	25	9	2
Future Volume (veh/h)	19	58	348	53	39	210	5	203	2	25	9	2
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		63	378	58	42	228	5	221	2	27	10	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
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		121	734	112	88	777	17	546	17	41	166	55
Arrive On Green		0.07	0.24	0.24	0.05	0.22	0.22	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h		1781	3091	470	1781	3555	78	1206	64	154	104	206
Grp Volume(v), veh/h		63	216	220	42	114	119	250	0	0	62	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1785	1781	1777	1856	1424	0	0	1601	0
Q Serve(g_s), s		1.0	3.2	3.2	0.7	1.6	1.6	3.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s		1.0	3.2	3.2	0.7	1.6	1.6	4.6	0.0	0.0	0.9	0.0
Prop In Lane		1.00		0.26	1.00		0.04	0.88		0.11	0.16	
Lane Grp Cap(c), veh/h		121	422	424	88	388	406	604	0	0	564	0
V/C Ratio(X)		0.52	0.51	0.52	0.48	0.29	0.29	0.41	0.00	0.00	0.11	0.00
Avail Cap(c_a), veh/h		295	1060	1064	295	1060	1107	1378	0	0	1439	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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		13.6	10.0	10.0	14.0	9.8	9.8	9.7	0.0	0.0	8.4	0.0
Incr Delay (d2), s/veh		3.4	1.0	1.0	4.0	0.4	0.4	0.5	0.0	0.0	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
%ile BackOfQ(50%),veh/ln		0.4	0.8	0.8	0.3	0.4	0.4	1.1	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		17.0	11.0	11.0	18.0	10.3	10.2	10.2	0.0	0.0	8.5	0.0
LnGrp LOS		B	B	B	B	B	B	B	A	A	A	A
Approach Vol, veh/h			499			275			250			62
Approach Delay, s/veh			11.7			11.4			10.2			8.5
Approach LOS			B			B			B			A
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.5	6.0	11.7		12.5	6.6	11.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.0	5.0	18.0		25.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		6.6	2.7	5.2		2.9	3.0	3.6				
Green Ext Time (p_c), s		1.4	0.0	1.9		0.3	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: CUM + PROJ w MIT AM

02/01/2024

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	46
Future Volume (veh/h)	46
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	50
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	343
Arrive On Green	0.27
Sat Flow, veh/h	1291
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.81
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	705	547	23	0	91
Future Vol, veh/h	0	705	547	23	0	91
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	0	766	595	25	0	99

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	310
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	585
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	585
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	585
HCM Lane V/C Ratio	-	-	-	0.169
HCM Control Delay (s)	-	-	-	12.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.6

HCM 6th Signalized Intersection Summary
 1: W. Atherton Dr. & Airport Way

Timing Plan: CUM + PROJ w MIT PM

02/01/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↖	↖	↑↑	↖	↖	↑↔		↖	↑	↖
Traffic Volume (veh/h)	248	33	16	128	48	276	3	500	189	354	611	361
Future Volume (veh/h)	248	33	16	128	48	276	3	500	189	354	611	361
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	270	36	17	139	52	300	3	543	205	385	664	392
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	370	343	290	176	622	661	169	675	254	432	776	657
Arrive On Green	0.11	0.18	0.18	0.10	0.17	0.17	0.10	0.27	0.27	0.24	0.41	0.41
Sat Flow, veh/h	3456	1870	1581	1781	3554	1582	1781	2526	950	1781	1870	1585
Grp Volume(v), veh/h	270	36	17	139	52	300	3	381	367	385	664	392
Grp Sat Flow(s),veh/h/ln	1728	1870	1581	1781	1777	1582	1781	1777	1699	1781	1870	1585
Q Serve(g_s), s	6.5	1.4	0.6	6.6	1.1	11.8	0.1	17.3	17.4	18.1	27.9	10.6
Cycle Q Clear(g_c), s	6.5	1.4	0.6	6.6	1.1	11.8	0.1	17.3	17.4	18.1	27.9	10.6
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	370	343	290	176	622	661	169	475	454	432	776	657
V/C Ratio(X)	0.73	0.10	0.06	0.79	0.08	0.45	0.02	0.80	0.81	0.89	0.86	0.60
Avail Cap(c_a), veh/h	899	898	759	422	1623	1107	216	668	639	649	1157	981
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	37.4	29.4	16.7	38.1	29.9	18.1	35.5	29.6	29.6	31.6	23.0	8.0
Incr Delay (d2), s/veh	2.8	0.1	0.1	7.8	0.1	0.5	0.0	4.8	5.2	10.2	4.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.6	0.3	3.1	0.4	3.9	0.1	7.6	7.3	8.5	12.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	29.5	16.7	45.9	29.9	18.6	35.5	34.4	34.8	41.9	27.3	8.9
LnGrp LOS	D	C	B	D	C	B	D	C	C	D	C	A
Approach Vol, veh/h		323			491			751			1441	
Approach Delay, s/veh		37.7			27.5			34.6			26.2	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.5	27.6	13.0	20.4	12.7	40.4	13.8	19.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	32.5	20.5	41.5	10.5	53.5	22.5	39.5				
Max Q Clear Time (g_c+I1), s	20.1	19.4	8.6	3.4	2.1	29.9	8.5	13.8				
Green Ext Time (p_c), s	0.9	3.7	0.2	0.2	0.0	6.0	0.7	1.3				

Intersection Summary

HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕			↕					↖	↖	↖
Traffic Vol, veh/h	256	307	26	0	254	27	0	0	13	52	0	121
Future Vol, veh/h	256	307	26	0	254	27	0	0	13	52	0	121
Conflicting Peds, #/hr	0	0	1	1	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	200	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
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	278	334	28	0	276	29	0	0	14	57	0	132

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	305	0	0	-	-	0	-	-	182	1014	-	153
Stage 1	-	-	-	-	-	-	-	-	-	291	-	-
Stage 2	-	-	-	-	-	-	-	-	-	723	-	-
Critical Hdwy	4.14	-	-	-	-	-	-	-	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	-	-	-	-	-	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1253	-	-	0	-	0	0	0	829	193	0	866
Stage 1	-	-	-	0	-	0	0	0	-	693	0	-
Stage 2	-	-	-	0	-	0	0	0	-	384	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1253	-	-	-	-	-	-	-	828	157	-	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	268	-	-
Stage 1	-	-	-	-	-	-	-	-	-	539	-	-
Stage 2	-	-	-	-	-	-	-	-	-	294	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.8			0			9.4			13.5		
HCM LOS							A			B		

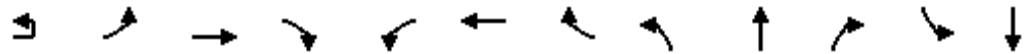
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	828	1253	-	-	-	-	268	866
HCM Lane V/C Ratio	0.017	0.222	-	-	-	-	0.211	0.152
HCM Control Delay (s)	9.4	8.7	-	-	-	-	22	9.9
HCM Lane LOS	A	A	-	-	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.8	-	-	-	-	0.8	0.5

HCM 6th Signalized Intersection Summary

Timing Plan: CUM + PROJ w MIT PM

3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

02/01/2024



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↕		↕	↕			↕			↕
Traffic Volume (veh/h)	5	42	213	109	32	123	4	117	2	14	8	2
Future Volume (veh/h)	5	42	213	109	32	123	4	117	2	14	8	2
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		46	232	118	35	134	4	127	2	15	9	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
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		97	517	254	77	749	22	505	20	30	190	33
Arrive On Green		0.05	0.22	0.22	0.04	0.21	0.21	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h		1781	2309	1134	1781	3524	105	1195	100	151	129	168
Grp Volume(v), veh/h		46	177	173	35	67	71	144	0	0	59	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1666	1781	1777	1851	1446	0	0	1593	0
Q Serve(g_s), s		0.6	2.2	2.3	0.5	0.8	0.8	1.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s		0.6	2.2	2.3	0.5	0.8	0.8	2.1	0.0	0.0	0.8	0.0
Prop In Lane		1.00		0.68	1.00		0.06	0.88		0.10	0.15	
Lane Grp Cap(c), veh/h		97	398	373	77	378	393	555	0	0	480	0
V/C Ratio(X)		0.47	0.44	0.46	0.46	0.18	0.18	0.26	0.00	0.00	0.12	0.00
Avail Cap(c_a), veh/h		353	1267	1188	353	1267	1320	1649	0	0	1717	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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		11.6	8.4	8.5	11.8	8.1	8.1	8.9	0.0	0.0	8.4	0.0
Incr Delay (d2), s/veh		3.5	0.8	0.9	4.2	0.2	0.2	0.2	0.0	0.0	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
%ile BackOfQ(50%),veh/ln		0.2	0.4	0.4	0.2	0.2	0.2	0.5	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		15.1	9.2	9.4	16.0	8.4	8.4	9.1	0.0	0.0	8.5	0.0
LnGrp LOS		B	A	A	B	A	A	A	A	A	A	A
Approach Vol, veh/h			396			173			144			59
Approach Delay, s/veh			10.0			9.9			9.1			8.5
Approach LOS			A			A			A			A
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.5	5.6	10.2		9.5	5.9	9.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.0	5.0	18.0		25.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		4.1	2.5	4.3		2.8	2.6	2.8				
Green Ext Time (p_c), s		0.8	0.0	1.5		0.3	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			9.7									
HCM 6th LOS			A									
Notes												
User approved ignoring U-Turning movement.												

HCM 6th Signalized Intersection Summary
 3: Sparrowhawk St./Sparrowhawk Dwy. & W. Atherton Dr.

Timing Plan: CUM + PROJ w MIT PM

02/01/2024

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	44
Future Volume (veh/h)	44
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	48
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	257
Arrive On Green	0.20
Sat Flow, veh/h	1296
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.81
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	583	364	18	0	83
Future Vol, veh/h	0	583	364	18	0	83
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	0	634	396	20	0	90

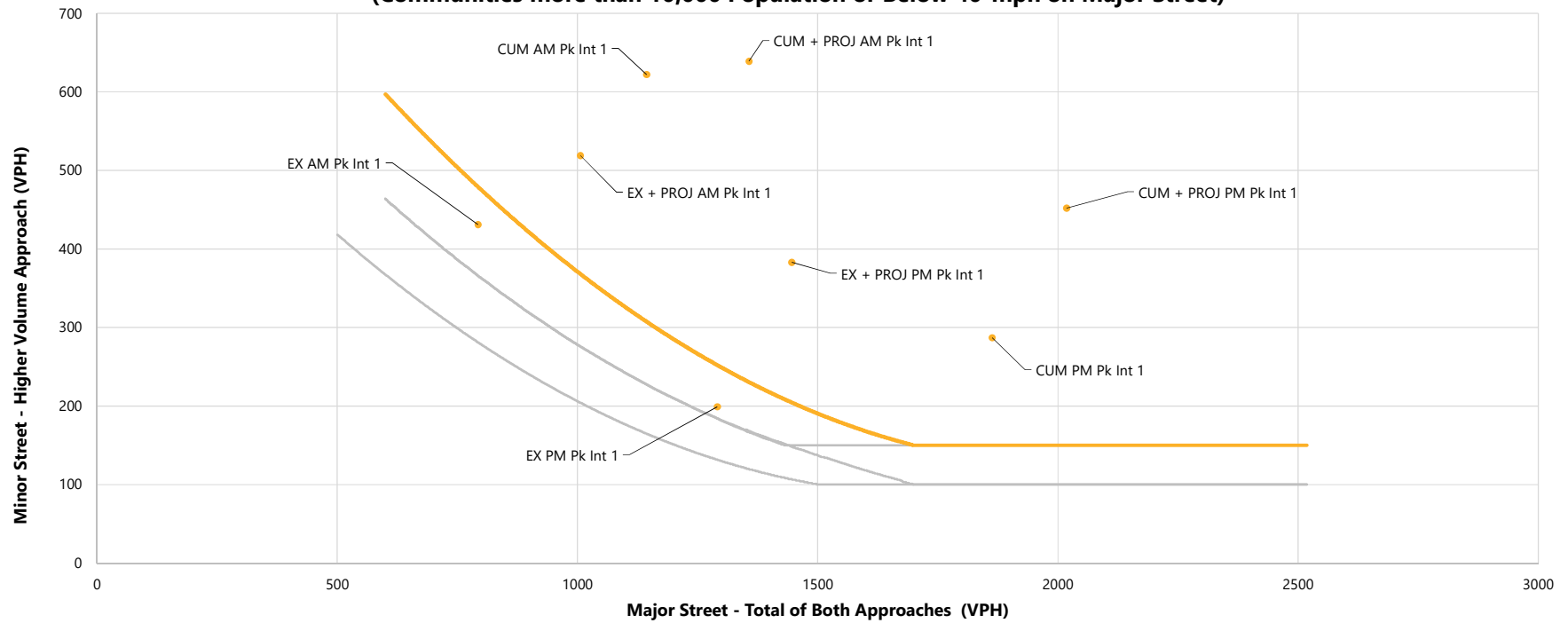
Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	679
HCM Lane V/C Ratio	-	-	-	0.133
HCM Control Delay (s)	-	-	-	11.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.5

Appendix I: W. Atherton Drive at Airport
Way (Study Intersection 1) – Signal Warrant
Analysis Worksheet

**Figure 4C-3. Warrant 3, Peak Hour Vehicular Volume
(Communities more than 10,000 Population or Below 40-mph on Major Street)**

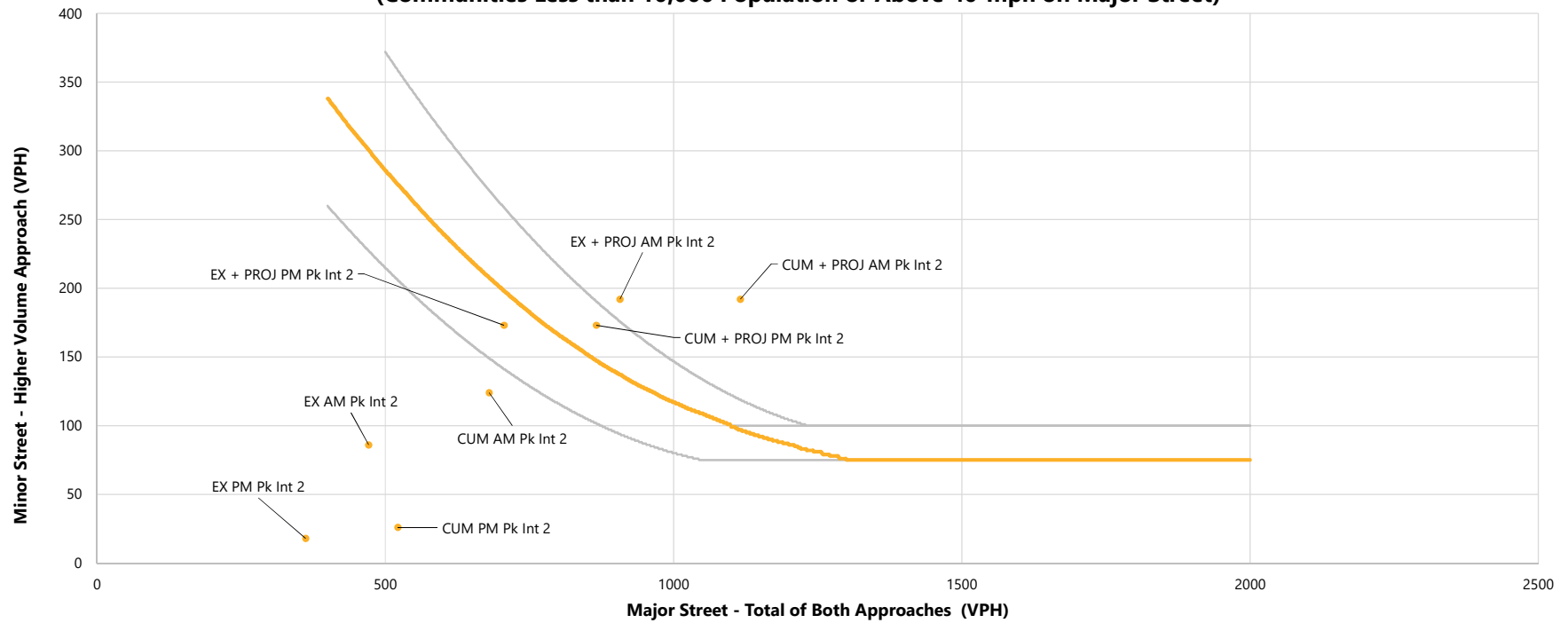


**Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.*

— 2 Major & 1 Minor — 1 Major & 1 Minor — 1 Major & 2 Minor — 2 Major & 2 Minor

Appendix J: Sage Sparrow Avenue at W.
Atherton Drive (Study Intersection 2) –
Signal Warrant Analysis Worksheet

**Figure 4C-4. Warrant 3, Peak Hour Vehicular Volume
(Communities Less than 10,000 Population or Above 40-mph on Major Street)**

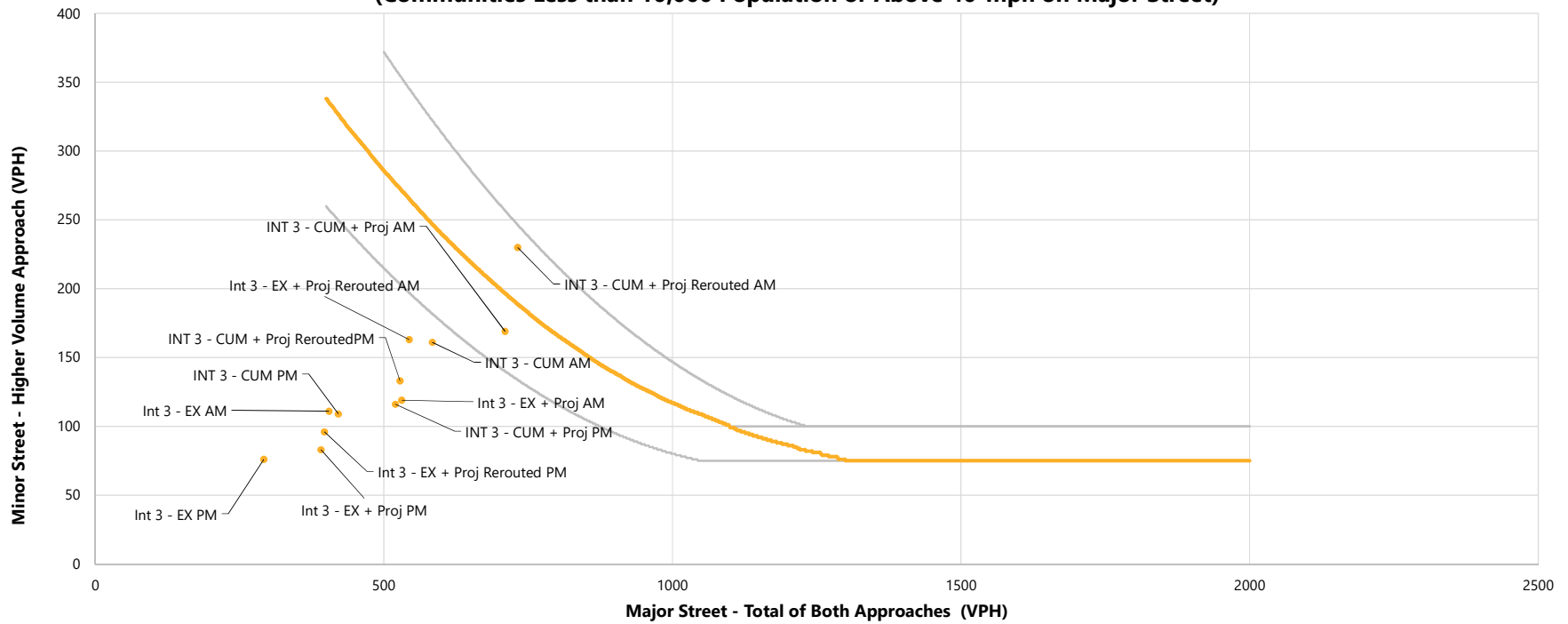


**Note: 100 vph applies as the lower threshold volume for a minor -street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.*

— 2 Major & 2 Minor — 1 Major & 1 Minor — 1 Major & 2 Minor — 2 Major & 1 Minor

Appendix K: Sparrowhawk Street at W.
Atherton Drive (Study Intersection 3) –
Signal Warrant Analysis Worksheet

**Figure 4C-4. Warrant 3, Peak Hour Vehicular Volume
(Communities Less than 10,000 Population or Above 40-mph on Major Street)**



**Note: 100 vph applies as the lower threshold volume for a minor -street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.*

— 2 Major & 2 Minor — 1 Major & 1 Minor — 1 Major & 2 Minor — 2 Major & 1 Minor

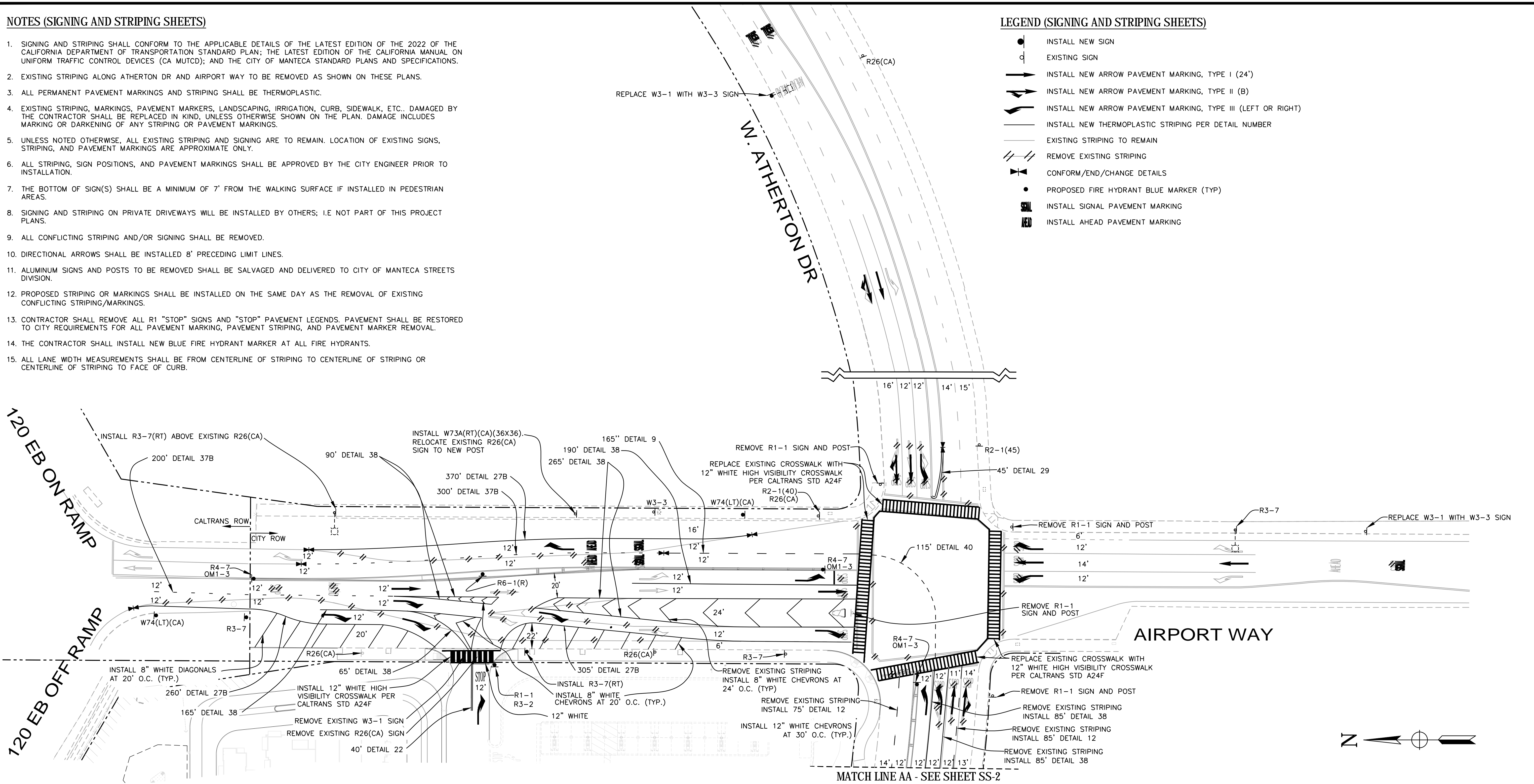
Appendix L: Planned Near-Term
Intersection Improvements – W. Atherton
Drive at Airport Way

NOTES (SIGNING AND STRIPING SHEETS)

- SIGNING AND STRIPING SHALL CONFORM TO THE APPLICABLE DETAILS OF THE LATEST EDITION OF THE 2022 OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD PLAN; THE LATEST EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD); AND THE CITY OF MANTECA STANDARD PLANS AND SPECIFICATIONS.
- EXISTING STRIPING ALONG AHERTON DR AND AIRPORT WAY TO BE REMOVED AS SHOWN ON THESE PLANS.
- ALL PERMANENT PAVEMENT MARKINGS AND STRIPING SHALL BE THERMOPLASTIC.
- EXISTING STRIPING, MARKINGS, PAVEMENT MARKERS, LANDSCAPING, IRRIGATION, CURB, SIDEWALK, ETC.. DAMAGED BY THE CONTRACTOR SHALL BE REPLACED IN KIND, UNLESS OTHERWISE SHOWN ON THE PLAN. DAMAGE INCLUDES MARKING OR DARKENING OF ANY STRIPING OR PAVEMENT MARKINGS.
- UNLESS NOTED OTHERWISE, ALL EXISTING STRIPING AND SIGNING ARE TO REMAIN. LOCATION OF EXISTING SIGNS, STRIPING, AND PAVEMENT MARKINGS ARE APPROXIMATE ONLY.
- ALL STRIPING, SIGN POSITIONS, AND PAVEMENT MARKINGS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
- THE BOTTOM OF SIGN(S) SHALL BE A MINIMUM OF 7' FROM THE WALKING SURFACE IF INSTALLED IN PEDESTRIAN AREAS.
- SIGNING AND STRIPING ON PRIVATE DRIVEWAYS WILL BE INSTALLED BY OTHERS; I.E NOT PART OF THIS PROJECT PLANS.
- ALL CONFLICTING STRIPING AND/OR SIGNING SHALL BE REMOVED.
- DIRECTIONAL ARROWS SHALL BE INSTALLED 8' PRECEDING LIMIT LINES.
- ALUMINUM SIGNS AND POSTS TO BE REMOVED SHALL BE SALVAGED AND DELIVERED TO CITY OF MANTECA STREETS DIVISION.
- PROPOSED STRIPING OR MARKINGS SHALL BE INSTALLED ON THE SAME DAY AS THE REMOVAL OF EXISTING CONFLICTING STRIPING/MARKINGS.
- CONTRACTOR SHALL REMOVE ALL R1 "STOP" SIGNS AND "STOP" PAVEMENT LEGENDS. PAVEMENT SHALL BE RESTORED TO CITY REQUIREMENTS FOR ALL PAVEMENT MARKING, PAVEMENT STRIPING, AND PAVEMENT MARKER REMOVAL.
- THE CONTRACTOR SHALL INSTALL NEW BLUE FIRE HYDRANT MARKER AT ALL FIRE HYDRANTS.
- ALL LANE WIDTH MEASUREMENTS SHALL BE FROM CENTERLINE OF STRIPING TO CENTERLINE OF STRIPING OR CENTERLINE OF STRIPING TO FACE OF CURB.

LEGEND (SIGNING AND STRIPING SHEETS)

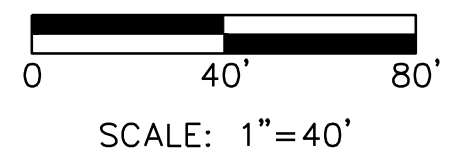
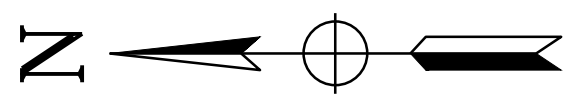
- INSTALL NEW SIGN
- EXISTING SIGN
- INSTALL NEW ARROW PAVEMENT MARKING, TYPE I (24')
- INSTALL NEW ARROW PAVEMENT MARKING, TYPE II (B)
- INSTALL NEW ARROW PAVEMENT MARKING, TYPE III (LEFT OR RIGHT)
- INSTALL NEW THERMOPLASTIC STRIPING PER DETAIL NUMBER
- EXISTING STRIPING TO REMAIN
- REMOVE EXISTING STRIPING
- CONFORM/END/CHANGE DETAILS
- PROPOSED FIRE HYDRANT BLUE MARKER (TYP)
- INSTALL SIGNAL PAVEMENT MARKING
- INSTALL AHEAD PAVEMENT MARKING



120 EB ON RAMP
120 EB OFF RAMP

AIRPORT WAY

MATCH LINE AA - SEE SHEET SS-2



MUTCD Sign Designation	Description	Sign Panel Size (Inches)			Panel Area (Sqft)	Background		Legend		Protective Overlay	Furnish Single Sheet Aluminum Sign				Install Roadside Sign (One Post)
		WIDTH	X	LENGTH		Sheeting Color	Retroreflective ASTM Type	Sheeting Color	Retroreflective ASTM Type		Premium	0.063" (Sqft)	0.080" (Sqft)	0.063" (Sqft)	
R4-7	Keep Right	24	x	30	5	White	IX	Black	XI	X	15				3
OM1-3	Object Marker	18	x	18	2.25	Yellow	XI	Black	XI	X	6.75				3
W3-3	Signal Ahead	36	x	36	9	Yellow	XI	Black	XI	X	27				3
R1-1	Stop	30	x	30	6.25	Red	XI	White	XI	X	6.25				1
R3-2	No Left Turn	24	x	24	4	White	IX	Black/Red	XI	X	4				1
R6-1R	One Way (Right)	36	x	12	3	White	IX	Black	XI	X		3			1
W74(LT)(CA)	Thru Traffic Merge left	36	x	36	9	Yellow	XI	Black	XI	X	18				2
W73(RT)(CA)	Right Lane Turns Right Ahead	36	x	36	9	Yellow	XI	Black	XI	X	18				2
R3-7(RT)	Right Lane Must Turn Right	30	x	30	6.25	White	IX	Black	XI	X	6.25				1

TJKM
4305 Hacienda Drive, Suite 550
Pleasanton, CA 94588
tjkm@tjkm.com

CITY OF MANTECA

AIRPORT WAY

SIGNING AND STRIPING PLANS

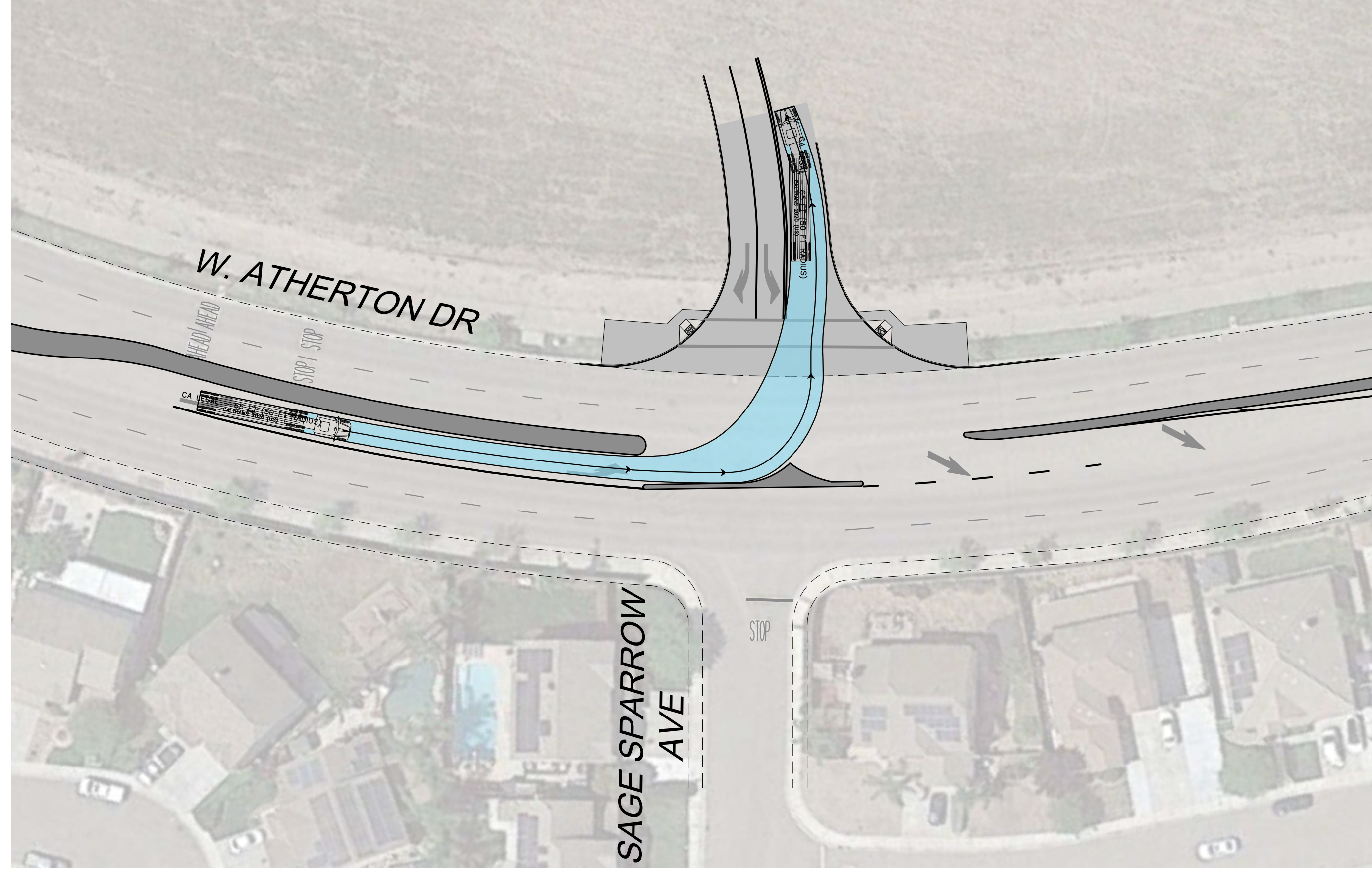
R.C.E. 15347

DESIGNED: ESB	DRAWING NO. SS-1	SHEET 6 OF 7
DRAWN: AM	DATE: JUNE 2023	SCALE: 1"=40'
CHECKED: ESB		PROJECT NO. 103-137

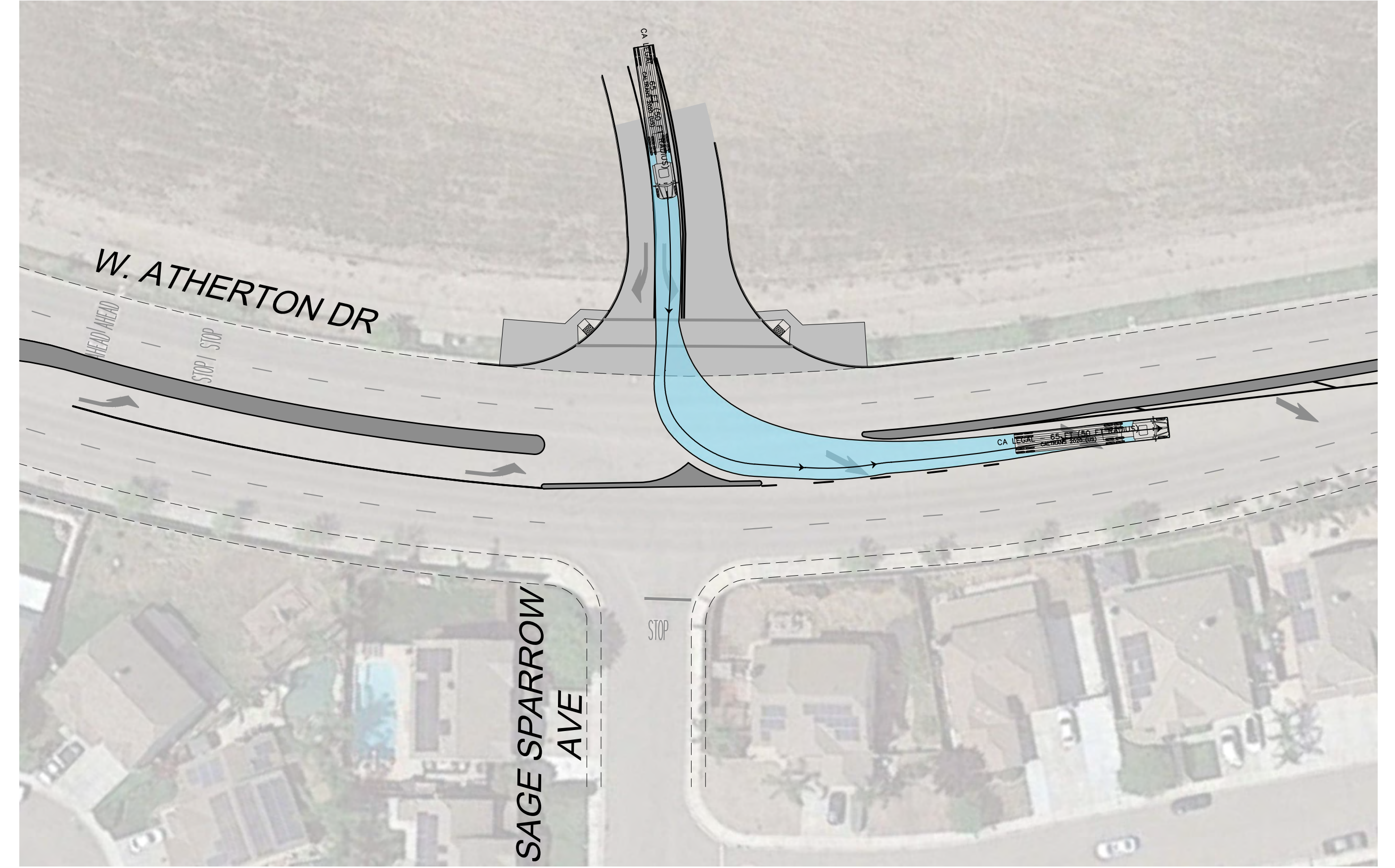
L:\CITIES\Maniteca\103-137 Airport Way Retail Sign\ACAD\103-137 Airport Retail SS-95-25.dwg 6-29-23 02:14:03 PM ejskklund

Appendix M: Truck Turning Templates – W. Atherton Drive at Sage Sparrow Avenue

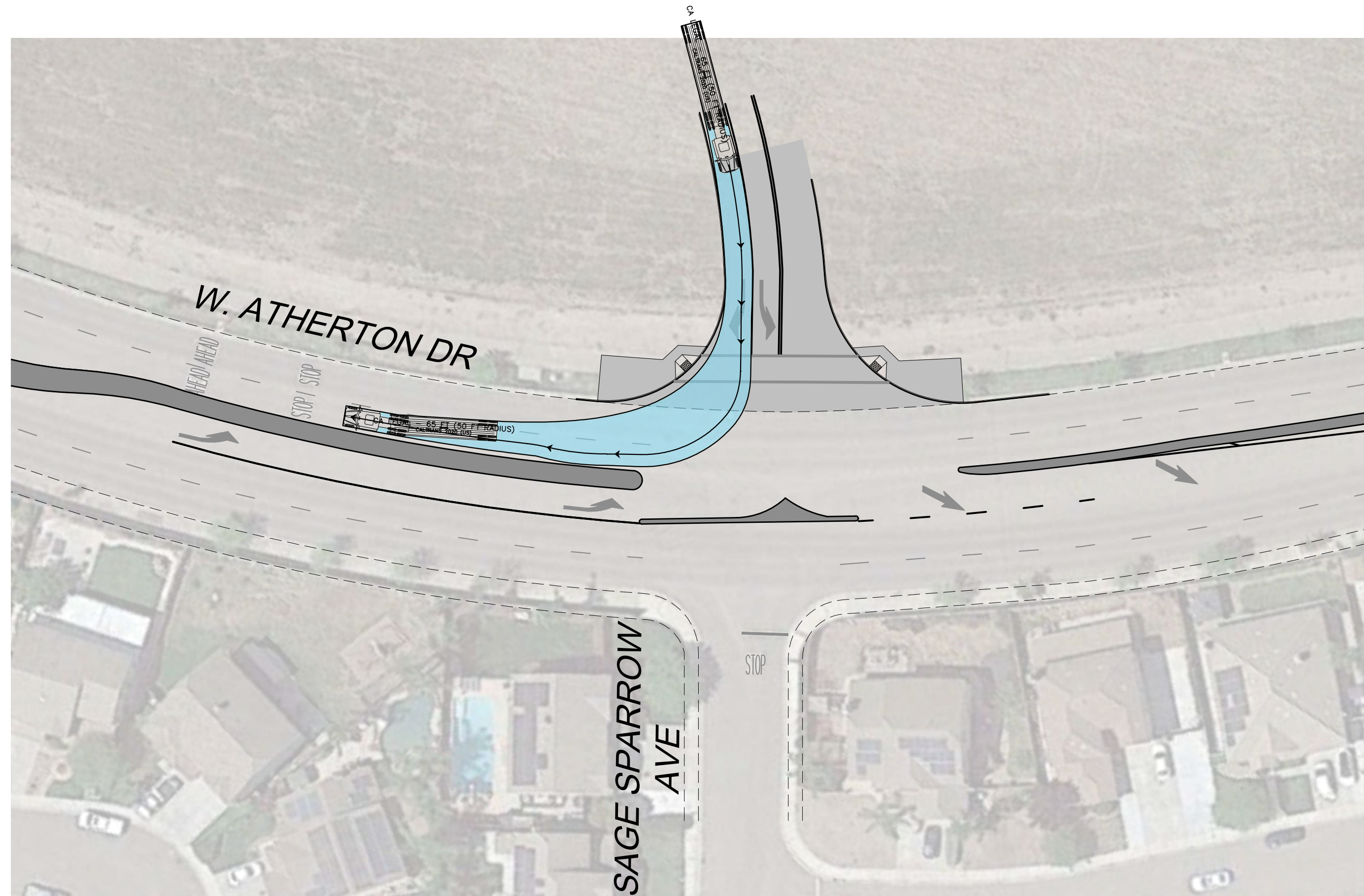
W. ATHERTON DR AND SAGE SPARROW AVENUE - CA LEGAL 65 TURN TEMPLATES



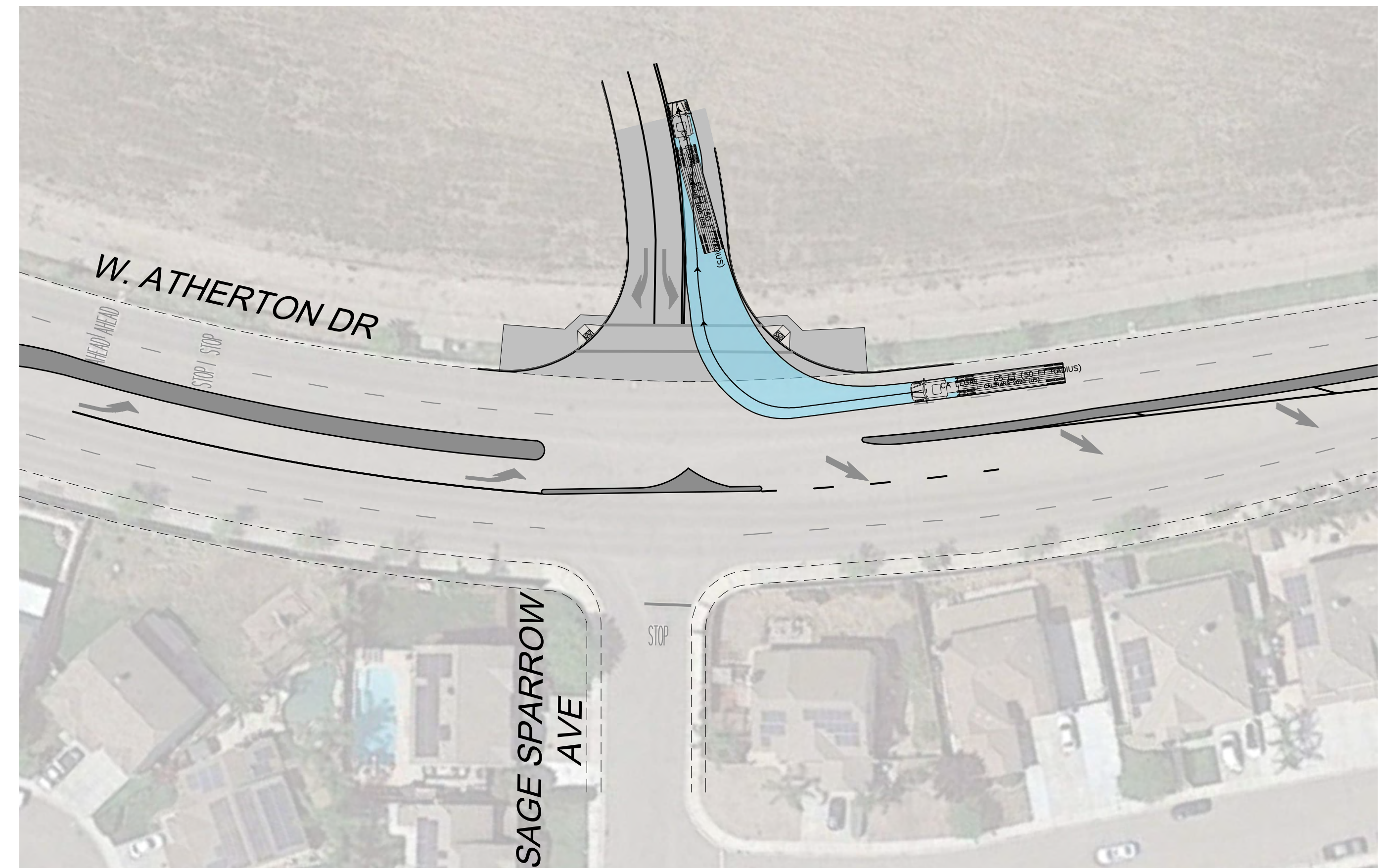
NORTHBOUND LEFT



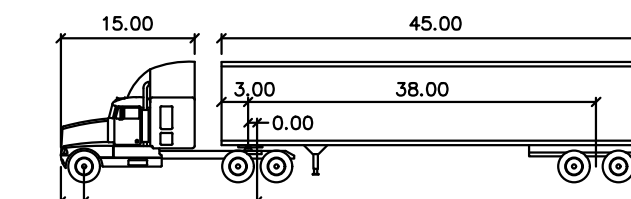
EASTBOUND LEFT



EASTBOUND RIGHT



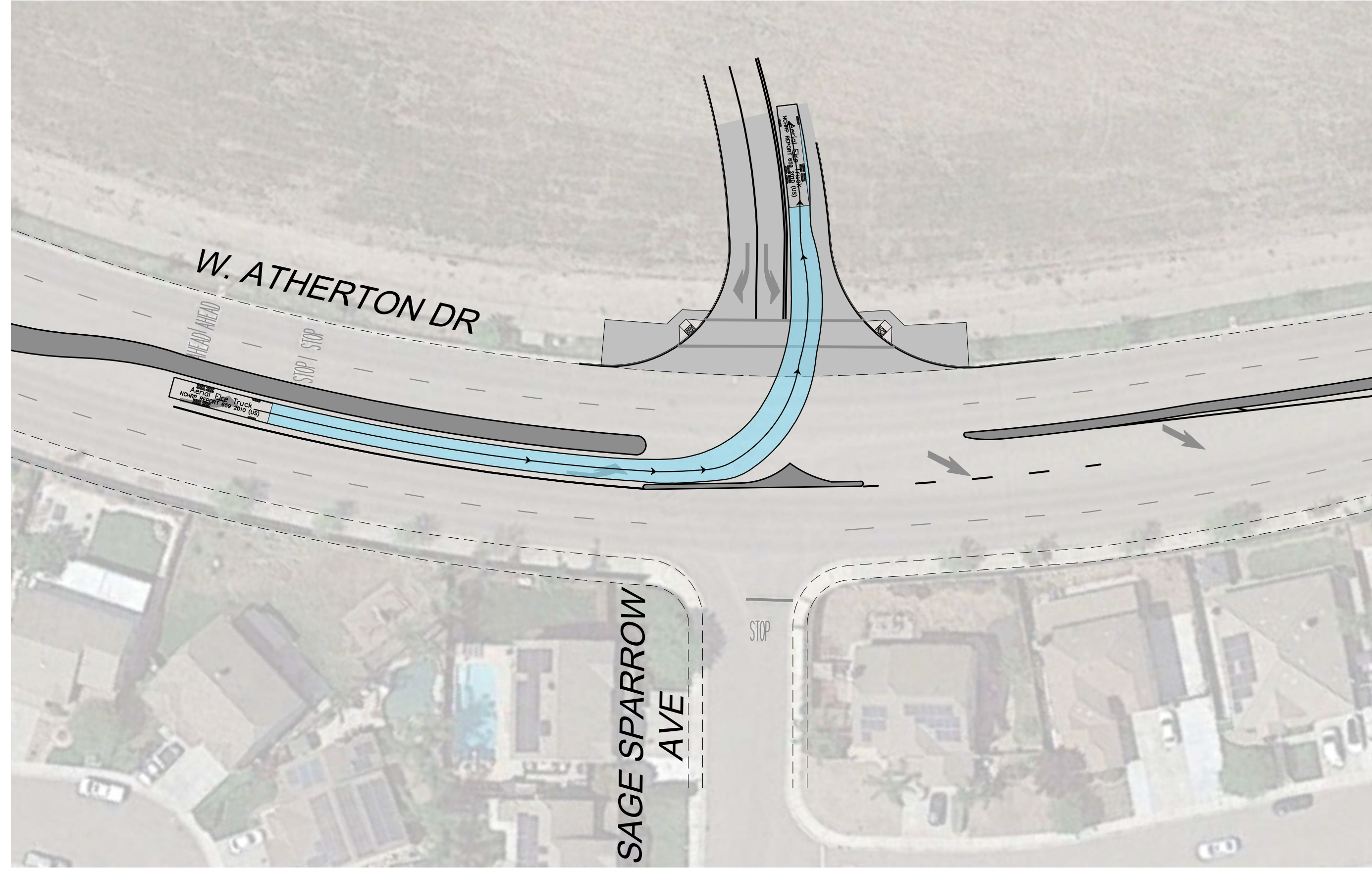
SOUTHBOUND RIGHT



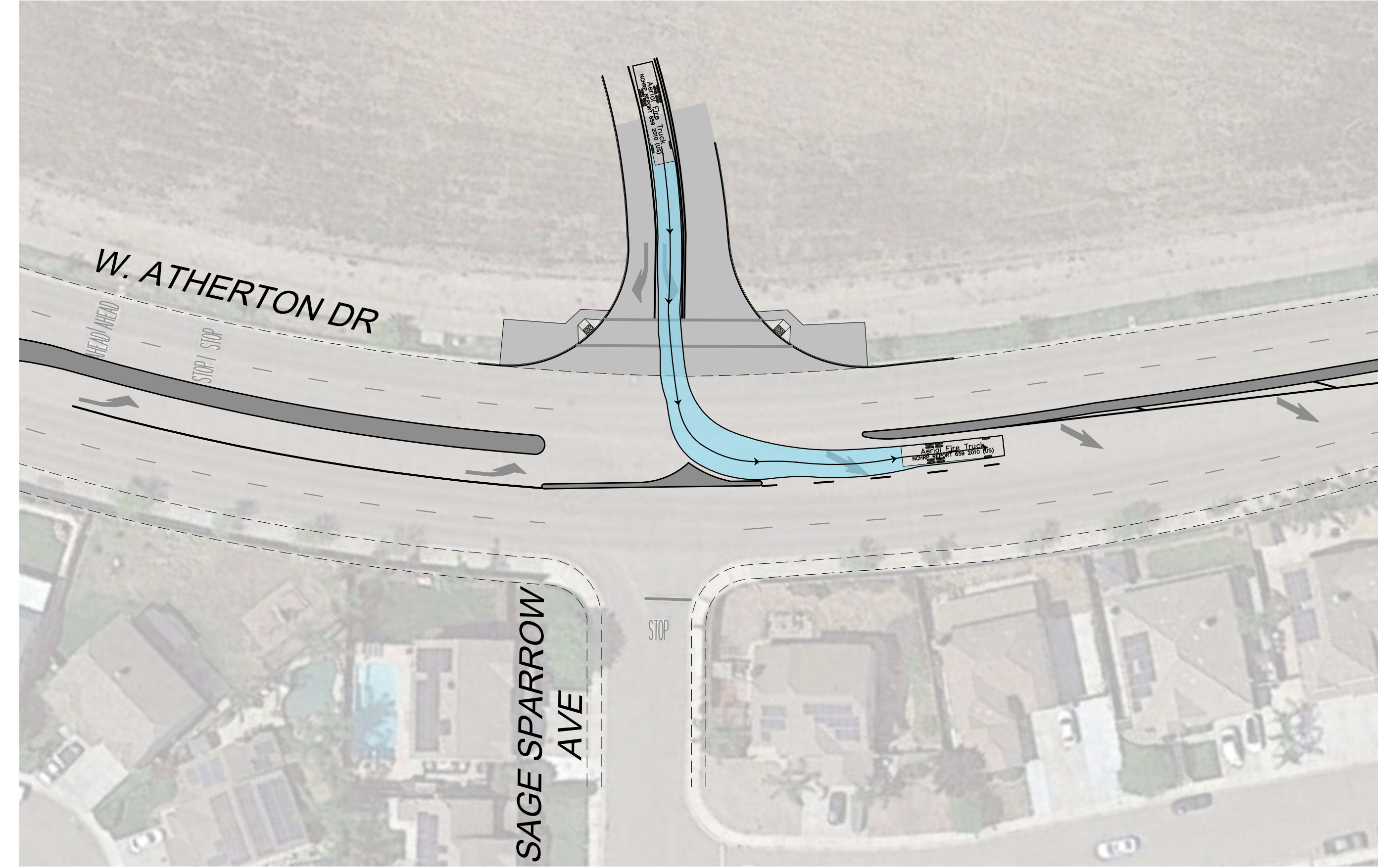
CA LEGAL - 65 FT (50 FT RADIUS)

feet	
Tractor Width	: 8.50
Trailer Width	: 8.50
Tractor Track	: 8.50
Trailer Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 26.3
Articulating Angle	: 70.0

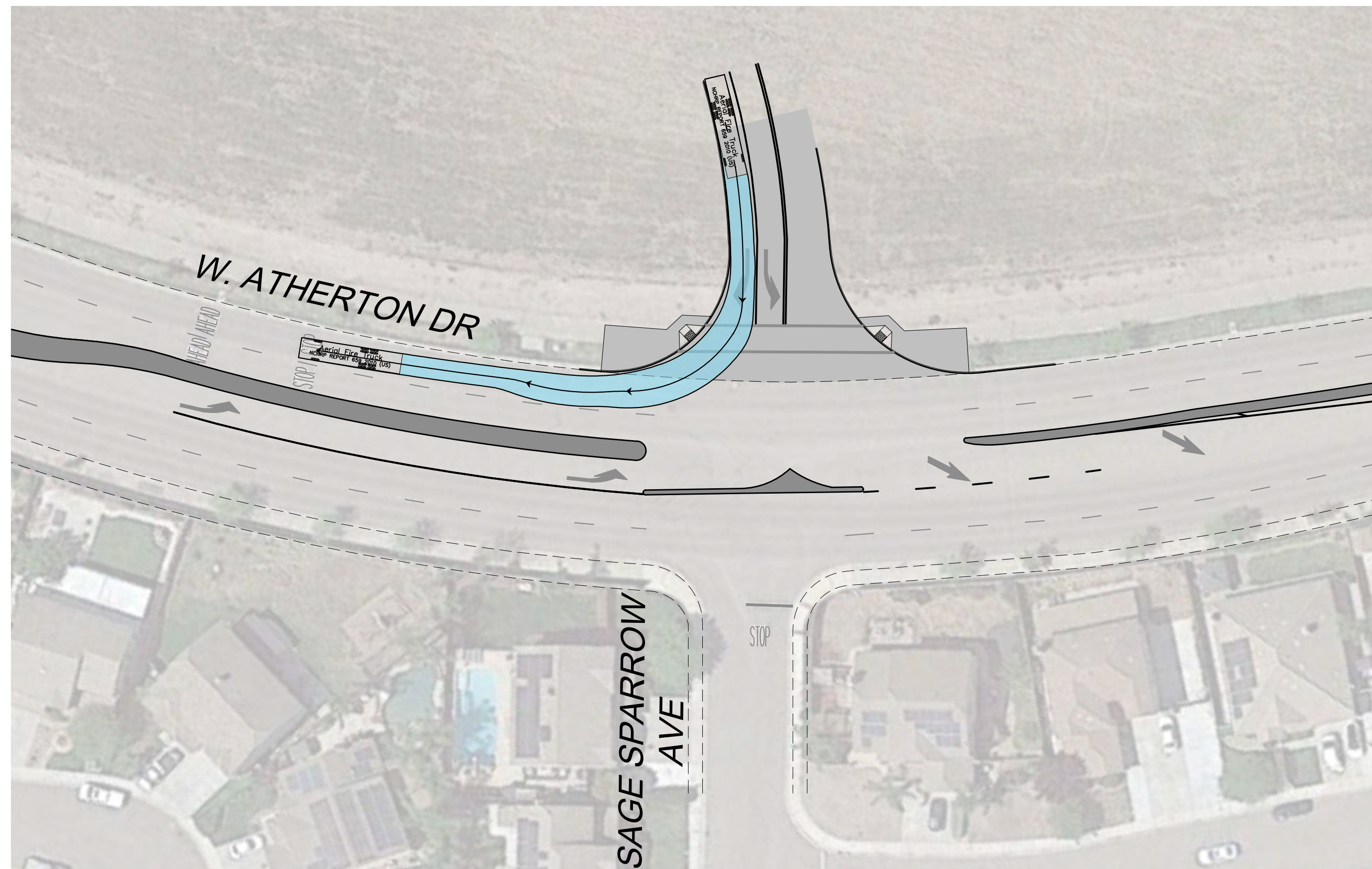
W. ATHERTON DR AND SAGE SPARROW AVENUE - AERIAL FIRE TRUCK TURN TEMPLATES



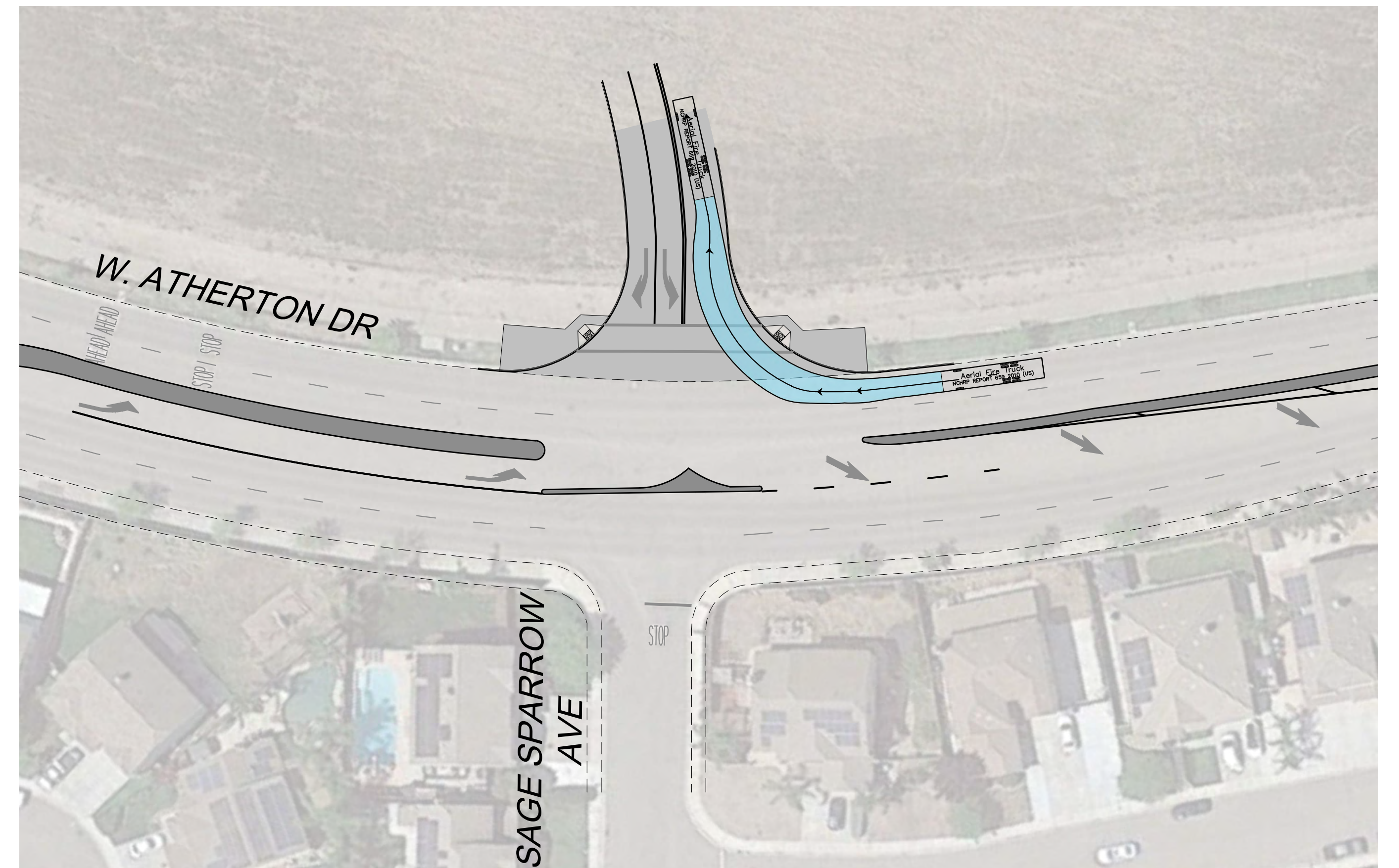
NORTHBOUND LEFT



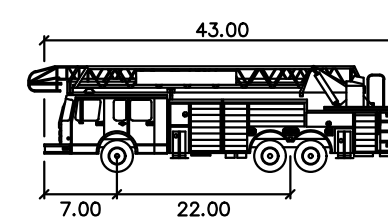
EASTBOUND LEFT



EASTBOUND RIGHT



SOUTHBOUND RIGHT



Aerial Fire Truck	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

APPENDIX C
HEALTH RISK ASSESSMENT (HRA) MODELING DATA

CONSTRUCTION (UNMITIGATED)

Construction Duration (days)

2024	2025	2026	Total
217	434	324	975

	2024	2025	2026	Total	Vendor	Hauling	Vendor	Hauling
Site Prep	3/4/2024	3/22/2024	15	15	0	0	0	0
Grading	3/25/2024	4/30/2024	27	27	0	0	0	0
Building	10/1/2024	12/31/2024	66	66	35.1	0	2313.96	0
Paving	5/1/2024	9/30/2024	109	109	0	0	0	0
Building	1/1/2025	12/31/2025	261	261	35.1	0	9150.66	0
AC (Parcel 3)	5/5/2025	12/31/2025	173	173	0	0	0	0
Building (Parcel 1)	1/1/2026	8/1/2026	152	152	35.06	0	5329.12	0
AC (Parcel 1)	1/1/2026	8/29/2026	172	172	0	0	0	0

On-Site Construction PM10 Exhaust (tons/yr)

Year	Phase	Unmitigated
2024	Site Prep	1.10E-02
2024	Grading	1.58E-02
2024	Building	1.50E-02
2024	Paving	1.95E-02
Total 2024		6.14E-02
2025	Building	5.18E-02
2025	AC	2.17E-03
Total 2025		5.40E-02
2026	Building	2.65E-02
2026	AC	1.83E-03
Total 2026		2.83E-02

Off-Site Construction PM10 Exhaust (tons/yr)

Year	Phase	Unmitigated
2024	Site Prep	0
2024	Grading	0.00E+00
2024	Building	4.62E-04
2024	Paving	0.00E+00
Total 2024		4.62E-04
2025	Building	1.83E-03
2025	AC	0.00E+00
Total 2025		1.83E-03
2026	Building	1.07E-03
2026	AC	0.00E+00
Total 2026		1.07E-03

Construction Group: ONSITE

PM10 Exhaust Onsite

Year	Tons/Year	g/s	Weighted Average On-Site Rate	AERMOD Unitized Rate (g/s)
2024	6.14E-02	0.008911	4.64E-03	1
2025	5.40E-02	0.003917		
2026	2.83E-02	0.002755		

Group: OFFSITE

	Trips		Miles		Weighted
	Vendor	Hauling	Vendor	Hauling	Trip length
2024	2313.96	0	9.01	20	9.01
2025	9150.66	0	9.01	20	9.01
2026	5329.12	0	9.01	20	9.01

PM10 Exhaust Off-Site

	Tons/Year	g/s	g/s per mile	Weighted Average Off-Site Rate
2024	0.0005	0.000067	7.44702E-06	1.21E-05
2025	1.83E-03	0.000133	1.47726E-05	
2026	1.07E-03	0.000104	1.15475E-05	

Group: OFFSITE

	Speed	Length (meters)	Length (Miles)	Emissions (g/sec per mile)	Emission Rate (g/sec)	AERMOD Unitized Rate (g/s)
Atherton	45	716.5	0.45	1.21E-05	5.37E-06	0.45
Airport Way	55	865	0.54	1.21E-05	6.49E-06	0.55
					1.19E-05	1.00E+00

OPERATIONS

Truck Route Emissions	Speed (mph)	Trips (veh/day)	Truck Emission Factor (g/mi)	TRU Emission Factor (g/hr)	Length (meters)	Length (mi/veh)	Truck Emissions (g/day)	TRU Emissions (g/day)	Emission Rate (g/sec)
Onsite	15	24	0.00027	1.01844	1079.5	0.67	4.30E-03	1.09	1.27E-05

Group: Offsite

	Speed (mph)	Trips (veh/day)	Truck Emission Factor (g/mi)	TRU Emission Factor (g/hr)	Length (meters)	Length (mi/veh)	Emissions (g/day)	TRU Emissions (g/day)	Emission Rate (g/sec)	AERMOD Unitized Emissions Rate (g/s)
OFFSITE										
Atherton	45	24	0.00113	1.01844	716.5	0.45	1.20E-02	0.242	2.94E-06	0.50
Airport Way	55	24	0.00113	1.01844	865	0.54	1.45E-02	0.239	2.93E-06	0.50
									5.87E-06	1

Group: Idling

Loading Dock Idling	Speed (mph)	Trips (veh/day)	Truck Emission Factor (g/mi)	TRU Emission Factor (g/hr)	Duration (hr/veh)	Truck Emissions (g/day)	TRU Emissions (g/day)	Idling Emissions Rate (g/sec)	AERMOD Unitized Emissions Rate (g/s)
Hotel	Idle	4	1.58818E-05	1.01844	0.25	1.59E-05	1.018440216	1.18E-05	0.1667
Auto	Idle	4	1.58818E-05	1.01844	0.25	1.59E-05	1.018440216	1.18E-05	0.1667
Shops	Idle	8	1.58818E-05	1.01844	0.25	3.18E-05	2.036880432	2.36E-05	0.3333
Restaurant	Idle	4	1.58818E-05	1.01844	0.25	1.59E-05	1.018440216	1.18E-05	0.1667
Gas Station	Idle	4	1.58818E-05	1.01844	0.25	1.59E-05	1.018440216	1.18E-05	0.1667
		24						7.07E-05	1.00E+00

Unitized emission rates (1 g/s) were used for source groups in AERMOD.

Group: Generator

Generators	# of Generators	Emission factor (tons/yr)	Emission factor (g/sec)	AERMOD Unitized Emissions Rate (g/s)
Hotel	1	0.006614	1.90E-04	0.5000
Car Dealer	2	0.006614	1.90E-04	0.5000
			3.81E-04	1.00E+00

TOG Emissions Factors and Annual Emissions

Emissions Source	TOG Emissions Factor (lb/1,000 gallon) ¹	Annual Gasoline Throughput (gallons/year)	TOG Annual Emissions (lbs/year)	Benzene Emission Rate (lbs/hr)	Benzene Emission Rate (g/s)
Fueling		7,000,000			
Non-ORVR Vehicles	0.42		2,940.0	0.001006849	1.27E-04
ORVR Vehicles	0.021		147.0	5.03425E-05	6.34E-06
Bulk Transfer Losses	0.15		1,050.0	0.000359589	4.53E-05
Pressure Driven Losses	0.024		168.0	5.75342E-05	7.25E-06
Gasoline Hose Losses	0.009		63.0	2.15753E-05	2.72E-06
Total Transfer and Pressure Losses			4,368.0	0.00149589	1.88E-04
Fueling - Spillage	0.24		1,680.0	0.001917808	2.42E-04
Total Transfer/Pressure and Spillage			6,048.0	0.003413699	0.000430119

<emissions rate for ops

CONSTRUCTION RISK (UNMITIGATED)

CONSTRUCTION RISK (UNMITIGATED)

Unmitigated
Onsite Office
4.6E-03 1.19E-05

Concentration (AVERAGE CONC) [µg/m³]
Unmitigated

Residential Dose

Risk by Age Group

Residential Dose = (Cm³/HR/BW/A) * 10¹⁵
A 1 Inhalation absorption factor
E 0.96 Exposure frequency (E50/year)
F 100 Days/year
t 1.0E-06 Risk to Sub-acute conversion

Residential Risk = Dose * CF * AF * ED/AT * F * HM
CF 11 Cancer Potency Factor for DMF
AT 70 Averaging Time

Main data table with columns: Decade, Receptor ID, X, Y, Z, Onsite, Office, Unmitigated, Residential Dose, Risk by Age Group (Inf, Child, Adol, Adult, Elderly), Age, BW, AF, ED, HM, F, ED.

*Construction would occur over 16 months
**Weighting factor is 50th percentile for 3rd to 5th and 80th percentile for 2nd and 6th grade.

CONSTRUCTION RISK (UNMITIGATED)

184	LCAR1	6358187	4125421	6348172	4125421	0.0811	0.12471	3.770E+0	1.48E+06	3.78E+04	1.3E+07	4.0E+07	2.3E+07	2.1E+07	9.5E+08	5.1E+09	1.2E+09	2.7E+09	0.0E+00	0.0E+00	1.3E+07
185	LCAR1	6358187	4125421	6348172	4125421	0.0959	0.13751	4.45E+0	1.48E+06	4.46E+04	1.5E+07	4.7E+07	2.7E+07	2.4E+07	1.1E+07	6.1E+05	1.5E+07	3.3E+09	0.0E+00	0.0E+00	1.6E+07
186	LCAR1	6358187	4125421	6348172	4125421	0.1049	0.17751	4.80E+0	2.11E+06	4.80E+04	1.6E+07	1.7E+07	5.1E+07	2.7E+07	1.2E+07	6.6E+05	1.8E+07	3.5E+09	0.0E+00	0.0E+00	1.7E+07
187	LCAR1	6358187	4125421	6348172	4125421	0.1149	0.20941	5.16E+0	2.44E+06	5.16E+04	1.7E+07	1.8E+07	5.6E+07	3.2E+07	1.5E+07	7.2E+05	1.9E+07	4.0E+09	0.0E+00	0.0E+00	1.8E+07
188	LCAR1	6358187	4125421	6348172	4125421	0.1250	0.24321	5.80E+0	2.87E+06	5.80E+04	1.8E+07	2.0E+07	6.1E+07	3.5E+07	1.6E+07	7.9E+05	1.9E+07	4.2E+09	0.0E+00	0.0E+00	2.0E+07
189	LCAR1	6358187	4125421	6348172	4125421	0.1351	0.27911	6.20E+0	3.32E+06	6.20E+04	1.9E+07	2.2E+07	6.6E+07	3.8E+07	1.8E+07	8.4E+05	2.0E+07	4.5E+09	0.0E+00	0.0E+00	2.2E+07
190	LCAR1	6358187	4125421	6348172	4125421	0.1452	0.31501	6.60E+0	3.78E+06	6.60E+04	2.0E+07	2.4E+07	7.2E+07	4.1E+07	2.0E+07	9.0E+05	2.1E+07	4.8E+09	0.0E+00	0.0E+00	2.4E+07
191	LCAR1	6358187	4125421	6348172	4125421	0.1553	0.35091	7.00E+0	4.24E+06	7.00E+04	2.1E+07	2.6E+07	7.6E+07	4.3E+07	2.1E+07	9.4E+05	2.2E+07	5.1E+09	0.0E+00	0.0E+00	2.6E+07
192	LCAR1	6358187	4125421	6348172	4125421	0.1654	0.38681	7.40E+0	4.70E+06	7.40E+04	2.2E+07	2.8E+07	8.0E+07	4.5E+07	2.2E+07	9.8E+05	2.3E+07	5.4E+09	0.0E+00	0.0E+00	2.8E+07
193	LCAR1	6358187	4125421	6348172	4125421	0.1755	0.42271	7.80E+0	5.16E+06	7.80E+04	2.3E+07	3.0E+07	8.4E+07	4.7E+07	2.3E+07	1.0E+06	2.4E+07	5.7E+09	0.0E+00	0.0E+00	3.0E+07
194	LCAR1	6358187	4125421	6348172	4125421	0.1856	0.45861	8.20E+0	5.62E+06	8.20E+04	2.4E+07	3.2E+07	8.8E+07	4.9E+07	2.4E+07	1.0E+06	2.5E+07	6.0E+09	0.0E+00	0.0E+00	3.2E+07
195	LCAR1	6358187	4125421	6348172	4125421	0.1957	0.49451	8.60E+0	6.08E+06	8.60E+04	2.5E+07	3.4E+07	9.2E+07	5.1E+07	2.5E+07	1.0E+06	2.6E+07	6.3E+09	0.0E+00	0.0E+00	3.4E+07
196	LCAR1	6358187	4125421	6348172	4125421	0.2058	0.53041	9.00E+0	6.54E+06	9.00E+04	2.6E+07	3.6E+07	9.6E+07	5.3E+07	2.6E+07	1.0E+06	2.7E+07	6.6E+09	0.0E+00	0.0E+00	3.6E+07
197	LCAR1	6358187	4125421	6348172	4125421	0.2159	0.56631	9.40E+0	7.00E+06	9.40E+04	2.7E+07	3.8E+07	1.0E+08	5.5E+07	2.7E+07	1.0E+06	2.8E+07	6.9E+09	0.0E+00	0.0E+00	3.8E+07
198	LCAR1	6358187	4125421	6348172	4125421	0.2260	0.60221	9.80E+0	7.46E+06	9.80E+04	2.8E+07	4.0E+07	1.0E+08	5.7E+07	2.8E+07	1.0E+06	2.9E+07	7.2E+09	0.0E+00	0.0E+00	4.0E+07
199	LCAR1	6358187	4125421	6348172	4125421	0.2361	0.63811	1.0E+05	7.92E+06	1.0E+05	2.9E+07	4.2E+07	1.0E+08	5.9E+07	2.9E+07	1.0E+06	3.0E+07	7.5E+09	0.0E+00	0.0E+00	4.2E+07
200	LCAR1	6358187	4125421	6348172	4125421	0.2462	0.67401	1.0E+05	8.38E+06	1.0E+05	3.0E+07	4.4E+07	1.0E+08	6.1E+07	3.0E+07	1.0E+06	3.1E+07	7.8E+09	0.0E+00	0.0E+00	4.4E+07
201	LCAR1	6358187	4125421	6348172	4125421	0.2563	0.70991	1.0E+05	8.84E+06	1.0E+05	3.1E+07	4.6E+07	1.0E+08	6.3E+07	3.1E+07	1.0E+06	3.2E+07	8.1E+09	0.0E+00	0.0E+00	4.6E+07
202	LCAR1	6358187	4125421	6348172	4125421	0.2664	0.74581	1.0E+05	9.30E+06	1.0E+05	3.2E+07	4.8E+07	1.0E+08	6.5E+07	3.2E+07	1.0E+06	3.3E+07	8.4E+09	0.0E+00	0.0E+00	4.8E+07
203	LCAR1	6358187	4125421	6348172	4125421	0.2765	0.78171	1.0E+05	9.76E+06	1.0E+05	3.3E+07	5.0E+07	1.0E+08	6.7E+07	3.3E+07	1.0E+06	3.4E+07	8.7E+09	0.0E+00	0.0E+00	5.0E+07
204	LCAR1	6358187	4125421	6348172	4125421	0.2866	0.81761	1.0E+05	1.0E+07	1.0E+05	3.4E+07	5.2E+07	1.0E+08	6.9E+07	3.4E+07	1.0E+06	3.5E+07	9.0E+09	0.0E+00	0.0E+00	5.2E+07
205	LCAR1	6358187	4125421	6348172	4125421	0.2967	0.85351	1.0E+05	1.0E+07	1.0E+05	3.5E+07	5.4E+07	1.0E+08	7.1E+07	3.5E+07	1.0E+06	3.6E+07	9.3E+09	0.0E+00	0.0E+00	5.4E+07
206	LCAR1	6358187	4125421	6348172	4125421	0.3068	0.88941	1.0E+05	1.0E+07	1.0E+05	3.6E+07	5.6E+07	1.0E+08	7.3E+07	3.6E+07	1.0E+06	3.7E+07	9.6E+09	0.0E+00	0.0E+00	5.6E+07
207	LCAR1	6358187	4125421	6348172	4125421	0.3169	0.92531	1.0E+05	1.0E+07	1.0E+05	3.7E+07	5.8E+07	1.0E+08	7.5E+07	3.7E+07	1.0E+06	3.8E+07	9.9E+09	0.0E+00	0.0E+00	5.8E+07
208	LCAR1	6358187	4125421	6348172	4125421	0.3270	0.96121	1.0E+05	1.0E+07	1.0E+05	3.8E+07	6.0E+07	1.0E+08	7.7E+07	3.8E+07	1.0E+06	3.9E+07	1.0E+10	0.0E+00	0.0E+00	6.0E+07
209	LCAR1	6358187	4125421	6348172	4125421	0.3371	0.99711	1.0E+05	1.0E+07	1.0E+05	3.9E+07	6.2E+07	1.0E+08	7.9E+07	3.9E+07	1.0E+06	4.0E+07	1.0E+10	0.0E+00	0.0E+00	6.2E+07
210	LCAR1	6358187	4125421	6348172	4125421	0.3472	1.03301	1.0E+05	1.0E+07	1.0E+05	4.0E+07	6.4E+07	1.0E+08	8.1E+07	4.0E+07	1.0E+06	4.1E+07	1.0E+10	0.0E+00	0.0E+00	6.4E+07
211	LCAR1	6358187	4125421	6348172	4125421	0.3573	1.06891	1.0E+05	1.0E+07	1.0E+05	4.1E+07	6.6E+07	1.0E+08	8.3E+07	4.1E+07	1.0E+06	4.2E+07	1.0E+10	0.0E+00	0.0E+00	6.6E+07
212	LCAR1	6358187	4125421	6348172	4125421	0.3674	1.10481	1.0E+05	1.0E+07	1.0E+05	4.2E+07	6.8E+07	1.0E+08	8.5E+07	4.2E+07	1.0E+06	4.3E+07	1.0E+10	0.0E+00	0.0E+00	6.8E+07
213	LCAR1	6358187	4125421	6348172	4125421	0.3775	1.14071	1.0E+05	1.0E+07	1.0E+05	4.3E+07	7.0E+07	1.0E+08	8.7E+07	4.3E+07	1.0E+06	4.4E+07	1.0E+10	0.0E+00	0.0E+00	7.0E+07
214	LCAR1	6358187	4125421	6348172	4125421	0.3876	1.17661	1.0E+05	1.0E+07	1.0E+05	4.4E+07	7.2E+07	1.0E+08	8.9E+07	4.4E+07	1.0E+06	4.5E+07	1.0E+10	0.0E+00	0.0E+00	7.2E+07
215	LCAR1	6358187	4125421	6348172	4125421	0.3977	1.21251	1.0E+05	1.0E+07	1.0E+05	4.5E+07	7.4E+07	1.0E+08	9.1E+07	4.5E+07	1.0E+06	4.6E+07	1.0E+10	0.0E+00	0.0E+00	7.4E+07
216	LCAR1	6358187	4125421	6348172	4125421	0.4078	1.24841	1.0E+05	1.0E+07	1.0E+05	4.6E+07	7.6E+07	1.0E+08	9.3E+07	4.6E+07	1.0E+06	4.7E+07	1.0E+10	0.0E+00	0.0E+00	7.6E+07
217	LCAR1	6358187	4125421	6348172	4125421	0.4179	1.28431	1.0E+05	1.0E+07	1.0E+05	4.7E+07	7.8E+07	1.0E+08	9.5E+07	4.7E+07	1.0E+06	4.8E+07	1.0E+10	0.0E+00	0.0E+00	7.8E+07
218	LCAR1	6358187	4125421	6348172	4125421	0.4280	1.32021	1.0E+05	1.0E+07	1.0E+05	4.8E+07	8.0E+07	1.0E+08	9.7E+07	4.8E+07	1.0E+06	4.9E+07	1.0E+10	0.0E+00	0.0E+00	8.0E+07
219	LCAR1	6358187	4125421	6348172	4125421	0.4381	1.35611	1.0E+05	1.0E+07	1.0E+05	4.9E+07	8.2E+07	1.0E+08	9.9E+07	4.9E+07	1.0E+06	5.0E+07	1.0E+10	0.0E+00	0.0E+00	8.2E+07
220	LCAR1	6358187	4125421	6348172	4125421	0.4482	1.39201	1.0E+05	1.0E+07	1.0E+05	5.0E+07	8.4E+07	1.0E+08	1.0E+08	5.0E+07	1.0E+06	5.1E+07	1.0E+10	0.0E+00	0.0E+00	8.4E+07
221	LCAR1	6358187	4125421	6348172	4125421	0.4583	1.42791	1.0E+05	1.0E+07	1.0E+05	5.1E+07	8.6E+07	1.0E+08	1.0E+08	5.1E+07	1.0E+06	5.2E+07	1.0E+10	0.0E+00	0.0E+00	8.6E+07
222	LCAR1	6358187	4125421	6348172	4125421	0.4684	1.46381	1.0E+05	1.0E+07	1.0E+05	5.2E+07	8.8E+07	1.0E+08	1.0E+08	5.2E+07	1.0E+06	5.3E+07	1.0E+10	0.0E+00	0.0E+00	8.8E+07
223	LCAR1	6358187	4125421	6348172	4125421	0.4785	1.50001	1.0E+05	1.0E+07	1.0E+05	5.3E+07	9.0E+07	1.0E+08	1.0E+08	5.3E+07	1.0E+06	5.4E+07	1.0E+10	0.0E+00	0.0E+00	9.0E+07
224	LCAR1	6358187	4125421	6348172	4125421	0.4886	1.53611	1.0E+05	1.0E+07	1.0E+05	5.4E+07	9.2E+07	1.0E+08	1.0E+08	5.4E+07	1.0E+06	5.5E+07	1.0E+10	0.0E+00	0.0E+00	9.2E+07
225	LCAR1	6358187	4125421	6348172	4125421	0.4987	1.57221	1.0E+05	1.0E+07	1.0E+05	5.5E+07	9.4E+07	1.0E+08	1.0E+08	5.5E+07	1.0E+06	5.6E+07	1.0E+10	0.0E+00	0.0E+00	9.4E+07
226	LCAR1	6358187	4125421	6348172	4125421	0.5088	1.60831	1.0E+05	1.0E+07	1.0E+05	5.6E+07	9.6E+07	1.0E+08	1.0E+08	5.6E+07	1.0E+06	5.7E+07	1.0E+10	0.0E+00	0.0E+00	9.6E+07
227	LCAR1	6358187	4125421	6348172	4125421	0.5189	1.64441	1.0E+05	1.0E+07	1.0E+05	5.7E+07	9.8E+07	1.0E+08	1.0E+08	5.7E+07	1.0E+06	5.8E+07	1.0E+10	0.0E+00	0.0E+00	9.8E+07
228	LCAR1	6358187	4125421	6348172	4125421	0.5290	1.68051	1.0E+05	1.0E+07	1.0E+05	5.8E+07	1.0E+08	1.0E+08	1.0E+08	5.8E+07	1.0E+06	5.9E+07	1.0E+10	0.0E+00	0.0E+00	1.0E+08
229	LCAR1	6358187	4125421	6348172	4125421	0.5391	1.71661	1.0E+05	1.0E+07	1.0E+05	5.9E+07	1.0E+08	1.0E+08	1.0E+08	5.9E+07	1.0E+06	6.0E+07	1.0E+10	0.0E+00	0.0E+00	1.0E+08
230	LCAR1	6358187	4125421	6348172	4125421	0.5492	1.75271	1.0E+05	1.0E+07	1.0E+05	6.0E+07	1.0E+08	1.0E+08	1.0E+08	6.0E+07	1.0E+06	6.1E+07	1.0E+10	0.0E+00	0.0E+00	1.0E+08
231	LCAR1	6358187	4125421	6348172	4125421	0.5593	1.78881	1.0E+05													

CONSTRUCTION RISK (UNMITIGATED)

Table with columns for project ID (e.g., 380 UCART), location (e.g., 653983), coordinates (e.g., 41827013, 41827013), and risk values (e.g., 5.9604, 2.3556, 5.9884). The table contains 37 rows of data.

CONSTRUCTION RISK (UNMITIGATED)

Table with columns for location (e.g., 772 LCAR1), ID (e.g., 635838), coordinates (e.g., 438061.21, 635818.7), and risk values (e.g., 9.3804, 3.0906, 5.3204). The table contains 1000 rows of data.

CONSTRUCTION RISK (UNMITIGATED)

Table with columns for project ID (e.g., 968 UCART), location (e.g., 6536187), coordinates (e.g., 4184241, 6536187, 4184241, 6536187), and risk values (e.g., 1.0203, 2.49856, 1.0203). The table contains 1000 rows of data.

CONSTRUCTION RISK (UNMITIGATED)

Table with columns for location (e.g., 1154 LC401), ID (e.g., 653853), coordinates (e.g., 418381.31, 63484.72), and risk values (e.g., 6376.04, 2.36, 0.76, 1.36, 3.50, 1.60, 8.76, 2.10, 4.50, 0.00, 0.00, 0.00, 2.10).

OPERATIONAL RISK (UNMITIGATED)

Table with 29 columns and 925 rows. Each row contains a unique identifier (e.g., 201 UC001) followed by 28 numerical values representing risk metrics. The values are organized into four groups of seven columns each.

Operational Risk - Fueling

Emissions Rate (g/s) = 4.32E-04

Concentration (µg/m³) at 1 µg

Unmitigated

Residential Dose

Risk by Age Group

Residential Dose = (Cair/BR/BW/PA*ET)^10

A 1 Inhalation Absorption Factor

B 0.6 Exposure Frequency (days/year)

C 10.6 Micrograms to milligrams conversion

D 10.6 Micrograms to milligrams conversion

E 10.6 Micrograms to milligrams conversion

F 10.6 Micrograms to milligrams conversion

G 10.6 Micrograms to milligrams conversion

H 10.6 Micrograms to milligrams conversion

I 10.6 Micrograms to milligrams conversion

J 10.6 Micrograms to milligrams conversion

K 10.6 Micrograms to milligrams conversion

L 10.6 Micrograms to milligrams conversion

M 10.6 Micrograms to milligrams conversion

N 10.6 Micrograms to milligrams conversion

O 10.6 Micrograms to milligrams conversion

P 10.6 Micrograms to milligrams conversion

Q 10.6 Micrograms to milligrams conversion

R 10.6 Micrograms to milligrams conversion

S 10.6 Micrograms to milligrams conversion

T 10.6 Micrograms to milligrams conversion

U 10.6 Micrograms to milligrams conversion

V 10.6 Micrograms to milligrams conversion

W 10.6 Micrograms to milligrams conversion

X 10.6 Micrograms to milligrams conversion

Y 10.6 Micrograms to milligrams conversion

Z 10.6 Micrograms to milligrams conversion

AA 10.6 Micrograms to milligrams conversion

AB 10.6 Micrograms to milligrams conversion

AC 10.6 Micrograms to milligrams conversion

AD 10.6 Micrograms to milligrams conversion

AE 10.6 Micrograms to milligrams conversion

AF 10.6 Micrograms to milligrams conversion

AG 10.6 Micrograms to milligrams conversion

AH 10.6 Micrograms to milligrams conversion

AI 10.6 Micrograms to milligrams conversion

AJ 10.6 Micrograms to milligrams conversion

AK 10.6 Micrograms to milligrams conversion

AL 10.6 Micrograms to milligrams conversion

AM 10.6 Micrograms to milligrams conversion

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AO 10.6 Micrograms to milligrams conversion

AP 10.6 Micrograms to milligrams conversion

AQ 10.6 Micrograms to milligrams conversion

AR 10.6 Micrograms to milligrams conversion

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AT 10.6 Micrograms to milligrams conversion

AU 10.6 Micrograms to milligrams conversion

AV 10.6 Micrograms to milligrams conversion

AW 10.6 Micrograms to milligrams conversion

AX 10.6 Micrograms to milligrams conversion

AY 10.6 Micrograms to milligrams conversion

AZ 10.6 Micrograms to milligrams conversion

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BB 10.6 Micrograms to milligrams conversion

BC 10.6 Micrograms to milligrams conversion

BD 10.6 Micrograms to milligrams conversion

BE 10.6 Micrograms to milligrams conversion

BF 10.6 Micrograms to milligrams conversion

BG 10.6 Micrograms to milligrams conversion

BH 10.6 Micrograms to milligrams conversion

BI 10.6 Micrograms to milligrams conversion

BJ 10.6 Micrograms to milligrams conversion

BK 10.6 Micrograms to milligrams conversion

BL 10.6 Micrograms to milligrams conversion

BM 10.6 Micrograms to milligrams conversion

BN 10.6 Micrograms to milligrams conversion

BO 10.6 Micrograms to milligrams conversion

BP 10.6 Micrograms to milligrams conversion

BQ 10.6 Micrograms to milligrams conversion

BR 10.6 Micrograms to milligrams conversion

BS 10.6 Micrograms to milligrams conversion

BT 10.6 Micrograms to milligrams conversion

BU 10.6 Micrograms to milligrams conversion

BV 10.6 Micrograms to milligrams conversion

BW 10.6 Micrograms to milligrams conversion

BX 10.6 Micrograms to milligrams conversion

BY 10.6 Micrograms to milligrams conversion

BZ 10.6 Micrograms to milligrams conversion

CA 10.6 Micrograms to milligrams conversion

CB 10.6 Micrograms to milligrams conversion

CC 10.6 Micrograms to milligrams conversion

CD 10.6 Micrograms to milligrams conversion

CE 10.6 Micrograms to milligrams conversion

CF 10.6 Micrograms to milligrams conversion

CG 10.6 Micrograms to milligrams conversion

CH 10.6 Micrograms to milligrams conversion

CI 10.6 Micrograms to milligrams conversion

CJ 10.6 Micrograms to milligrams conversion

CK 10.6 Micrograms to milligrams conversion

CL 10.6 Micrograms to milligrams conversion

CM 10.6 Micrograms to milligrams conversion

CN 10.6 Micrograms to milligrams conversion

CO 10.6 Micrograms to milligrams conversion

CP 10.6 Micrograms to milligrams conversion

CQ 10.6 Micrograms to milligrams conversion

CR 10.6 Micrograms to milligrams conversion

CS 10.6 Micrograms to milligrams conversion

CT 10.6 Micrograms to milligrams conversion

CU 10.6 Micrograms to milligrams conversion

CV 10.6 Micrograms to milligrams conversion

CW 10.6 Micrograms to milligrams conversion

CX 10.6 Micrograms to milligrams conversion

CY 10.6 Micrograms to milligrams conversion

CZ 10.6 Micrograms to milligrams conversion

DA 10.6 Micrograms to milligrams conversion

DB 10.6 Micrograms to milligrams conversion

DC 10.6 Micrograms to milligrams conversion

DD 10.6 Micrograms to milligrams conversion

DE 10.6 Micrograms to milligrams conversion

DF 10.6 Micrograms to milligrams conversion

DG 10.6 Micrograms to milligrams conversion

DH 10.6 Micrograms to milligrams conversion

DI 10.6 Micrograms to milligrams conversion

DJ 10.6 Micrograms to milligrams conversion

DK 10.6 Micrograms to milligrams conversion

DL 10.6 Micrograms to milligrams conversion

Table with columns: Discrete Receptor ID, X, Y, X', Y', Concentration (µg/m³) at 1 µg, Unmitigated, Residential Dose, Risk by Age Group (Age, BR/W, AS, FAH, ED (Dose)).

Notes:

1 Inhalation Absorption Factor, DEHA 2015, p. 5-24

2 Exposure Frequency (days/year), DEHA 2015, p. 5-24, 300/365 days in a year for a resident, and DEHA 2015, p. 5-20, 250/365 days, 5 days/week, 50 weeks/year

3 Unit to micrograms, liters to cubic meters conversion, DEHA 2015, Equation 4.1.1, case 2-4

4 Cancer Potency Factor for Benzene, DEHA 2015, Table 7.1, case 7-4

5 Age-Specific Time, DEHA 2015, Equation 8.2.4, case 8-7

6 Daily Breathing Rate normalized to Body Weight, DEHA 2015, Table 5.3, page 5-29 (5 l/min for 3rd-2nd, 80th for other age group)

7 Exposure Duration, DEHA 2015, Equation 8.2.4, case 8-7

8 Fraction of Time at Home, DEHA 2015, Table 8.4, case 8-8

9 Worker Adjustment Factor, DEHA 2015, Equation 8.4.1.2, page 8-29

UCART1	653187	4182863	653187	4182863	21245	0.00096682	3.3E-07	1.0E-06	5.8E-07	5.3E-07	2.4E-07	2.9E-08	1.8E-08	1.6E-08	3.5E-09	6.7E-08
UCART1	653187	4182863	653187	4182863	21246	0.00096684	3.3E-07	1.0E-06	5.8E-07	2.4E-07	2.9E-08	1.8E-08	1.6E-08	3.5E-09	6.7E-08	6.7E-08
UCART1	653187	4182863	653187	4182863	21247	0.00114449	4.0E-07	1.2E-06	8.6E-07	3.5E-07	2.9E-07	1.4E-08	3.4E-08	2.1E-08	1.9E-08	4.1E-07
UCART1	653267	4182863	653267	4182863	21048	0.00135534	4.8E-07	1.3E-06	7.6E-07	6.9E-07	3.1E-07	1.5E-08	3.7E-08	2.3E-08	2.1E-08	4.5E-07
UCART1	653267	4182863	653267	4182863	21049	0.00135535	4.8E-07	1.3E-06	7.6E-07	6.9E-07	3.1E-07	1.5E-08	3.7E-08	2.3E-08	2.1E-08	4.5E-07
UCART1	653337	4182863	653337	4182863	3.55607	0.00152933	5.3E-07	1.6E-06	1.3E-07	8.4E-07	3.8E-07	1.9E-08	4.6E-08	2.8E-08	2.5E-08	5.5E-07
UCART1	653377	4182863	653377	4182863	3.55611	0.00152934	5.3E-07	1.6E-06	1.3E-07	8.4E-07	3.8E-07	1.9E-08	4.6E-08	2.8E-08	2.5E-08	5.5E-07
UCART1	653417	4182863	653417	4182863	4.95912	0.00191807	6.0E-07	2.0E-06	1.1E-06	1.1E-06	4.8E-07	2.4E-08	5.7E-08	3.5E-08	3.2E-08	6.9E-07
UCART1	653457	4182863	653457	4182863	5.05792	0.00217507	7.5E-07	2.3E-06	1.3E-06	1.2E-06	5.4E-07	2.7E-08	6.5E-08	3.9E-08	3.6E-08	7.8E-07
UCART1	653497	4182863	653497	4182863	5.17963	0.00259261	8.4E-07	2.6E-06	1.5E-06	1.4E-06	6.2E-07	3.1E-08	7.4E-08	4.4E-08	4.1E-08	8.9E-07
UCART1	653537	4182863	653537	4182863	6.72413	0.00289261	1.0E-06	3.0E-06	1.8E-06	1.7E-06	7.4E-07	3.6E-08	8.6E-08	5.1E-08	4.8E-08	1.0E-07
UCART1	653577	4182863	653577	4182863	6.72414	0.00289262	1.0E-06	3.0E-06	1.8E-06	1.7E-06	7.4E-07	3.6E-08	8.6E-08	5.1E-08	4.8E-08	1.0E-07
UCART1	653617	4182863	653617	4182863	8.16532	0.00346834	1.2E-06	3.6E-06	2.1E-06	2.0E-06	8.7E-07	4.3E-08	1.0E-07	6.1E-08	5.8E-08	1.2E-07
UCART1	653657	4182863	653657	4182863	9.48027	0.00400223	1.4E-06	4.3E-06	2.5E-06	2.4E-06	1.0E-06	5.0E-07	1.2E-07	7.4E-08	7.1E-08	1.5E-07
UCART1	653697	4182863	653697	4182863	11.0271	0.00500087	1.7E-06	5.2E-06	3.0E-06	2.7E-06	1.3E-06	6.2E-07	1.5E-07	9.1E-08	8.7E-08	1.9E-07
UCART1	653737	4182863	653737	4182863	13.65792	0.00639413	2.0E-06	6.6E-06	3.8E-06	3.5E-06	1.6E-06	7.4E-07	1.8E-07	1.1E-07	1.1E-07	2.3E-07
UCART1	653777	4182863	653777	4182863	16.16995	0.00824469	2.5E-06	8.6E-06	5.0E-06	4.5E-06	2.1E-06	1.0E-06	2.5E-07	1.5E-07	1.4E-07	3.0E-07
UCART1	653817	4182863	653817	4182863	20.26379	0.01076039	3.0E-06	1.0E-05	6.0E-06	5.5E-06	2.6E-06	1.4E-06	3.4E-07	2.1E-07	2.0E-07	4.2E-07
UCART1	653857	4182863	653857	4182863	23.82135	0.01469793	3.6E-06	1.2E-05	7.0E-06	6.5E-06	3.0E-06	1.6E-06	2.1E-06	1.3E-06	1.2E-06	2.6E-06
UCART1	653897	4182863	653897	4182863	28.99258	0.02124978	4.4E-06	1.5E-05	8.5E-06	7.9E-06	3.6E-06	2.0E-06	2.6E-06	1.6E-06	1.5E-06	3.2E-06
UCART1	654117	4182863	654117	4182863	22.33651	0.00960783	3.2E-06	1.0E-05	5.8E-06	5.3E-06	2.4E-06	1.2E-06	2.9E-07	1.7E-07	1.6E-07	3.4E-07
UCART1	654297	4182863	654297	4182863	10.17379	0.00475719	1.5E-06	4.6E-06	2.6E-06	2.4E-06	1.1E-06	5.4E-07	1.3E-07	7.9E-08	7.5E-08	1.6E-07
UCART1	654337	4182863	654337	4182863	14.46503	0.00621781	2.2E-06	6.5E-06	3.6E-06	3.4E-06	1.6E-06	7.7E-07	1.9E-07	1.1E-07	1.0E-07	2.2E-07
UCART1	654377	4182863	654377	4182863	12.0254	0.00517251	1.8E-06	5.4E-06	3.1E-06	2.9E-06	1.3E-06	6.4E-07	1.5E-07	9.4E-08	8.5E-08	1.9E-07
UCART1	654417	4182863	654417	4182863	15.73729	0.00717905	2.2E-06	6.8E-06	3.8E-06	3.6E-06	1.7E-06	8.4E-07	2.1E-07	1.2E-07	1.1E-07	2.4E-07
UCART1	654457	4182863	654457	4182863	17.97974	0.00933971	2.7E-06	8.6E-06	4.7E-06	4.5E-06	2.1E-06	1.0E-06	2.6E-07	1.6E-07	1.5E-07	3.2E-07
UCART1	654497	4182863	654497	4182863	6.67485	0.00247079	9.0E-07	3.0E-06	1.7E-06	1.6E-06	7.2E-07	3.5E-08	8.4E-08	5.2E-08	4.7E-08	1.0E-07
UCART1	654537	4182863	654537	4182863	5.91766	0.00234207	8.0E-07	2.7E-06	1.5E-06	1.4E-06	6.4E-07	3.1E-08	7.6E-08	4.4E-08	4.2E-08	9.1E-07
UCART1	654577	4182863	654577	4182863	5.23646	0.00217466	7.0E-07	2.4E-06	1.4E-06	1.3E-06	5.7E-07	2.8E-08	6.8E-08	4.1E-08	3.7E-08	8.2E-07
UCART1	654617	4182863	654617	4182863	4.79504	0.00204963	7.1E-07	2.1E-06	1.2E-06	1.1E-06	5.1E-07	2.5E-08	6.1E-08	3.7E-08	3.4E-08	7.3E-07
UCART1	654657	4182863	654657	4182863	4.30962	0.00191863	6.5E-07	1.8E-06	1.1E-06	1.0E-06	4.6E-07	2.3E-08	5.5E-08	3.4E-08	3.1E-08	6.7E-07
UCART1	654697	4182863	654697	4182863	3.93375	0.00184793	5.8E-07	1.6E-06	1.0E-06	9.5E-07	4.2E-07	2.1E-08	5.0E-08	3.1E-08	2.8E-08	6.1E-07
UCART1	654737	4182863	654737	4182863	3.59007	0.00184426	5.3E-07	1.4E-06	9.0E-07	8.5E-07	3.9E-07	1.9E-08	4.6E-08	2.8E-08	2.5E-08	5.5E-07
UCART1	654777	4182863	654777	4182863	3.23999	0.00183924	4.9E-07	1.2E-06	7.8E-07	7.3E-07	3.6E-07	1.8E-08	4.2E-08	2.6E-08	2.3E-08	4.9E-07
UCART1	654817	4182863	654817	4182863	3.04558	0.00180975	4.5E-07	1.0E-06	7.0E-07	6.5E-07	3.1E-07	1.6E-08	3.9E-08	2.4E-08	2.2E-08	4.7E-07
UCART1	654857	4182863	654857	4182863	2.82028	0.00179279	4.2E-07	9.0E-06	6.2E-07	5.7E-07	2.8E-07	1.5E-08	3.5E-08	2.3E-08	2.1E-08	4.5E-07
UCART1	654897	4182863	654897	4182863	2.62164	0.00177471	3.9E-07	8.2E-06	5.6E-07	5.1E-07	2.6E-07	1.4E-08	3.4E-08	2.2E-08	2.0E-08	4.3E-07
UCART1	654937	4182863	654937	4182863	2.44392	0.00175176	3.6E-07	7.4E-06	5.0E-07	4.6E-07	2.3E-07	1.3E-08	3.1E-08	1.9E-08	1.8E-08	3.9E-07
UCART1	654977	4182863	654977	4182863	2.28449	0.00173289	3.4E-07	6.6E-06	4.5E-07	4.2E-07	2.1E-07	1.2E-08	2.9E-08	1.8E-08	1.7E-08	3.6E-07
UCART1	655017	4182863	655017	4182863	2.1414	0.00172106	3.2E-07	6.0E-06	4.1E-07	3.8E-07	1.9E-07	1.1E-08	2.8E-08	1.7E-08	1.5E-08	3.3E-07
UCART1	655057	4182863	655057	4182863	2.03484	0.00171025	3.0E-07	5.6E-06	3.7E-07	3.5E-07	1.7E-07	1.0E-08	2.6E-08	1.6E-08	1.4E-08	3.1E-07
UCART1	655097	4182863	655097	4182863	1.94841	0.00170484	2.8E-07	5.2E-06	3.4E-07	3.2E-07	1.6E-07	9.0E-08	2.4E-08	1.5E-08	1.3E-08	2.9E-07
UCART1	655137	4182863	655137	4182863	1.8792	0.00170099	2.7E-07	4.9E-06	3.2E-07	3.0E-07	1.5E-07	8.5E-08	2.3E-08	1.4E-08	1.3E-08	2.8E-07
UCART1	655177	4182863	655177	4182863	1.81973	0.00169877	2.6E-07	4.6E-06	3.0E-07	2.9E-07	1.4E-07	8.0E-08	2.2E-08	1.3E-08	1.2E-08	2.7E-07
UCART1	655217	4182863	655217	4182863	1.76405	0.00169874	2.5E-07	4.3E-06	2.8E-07	2.7E-07	1.3E-07	7.5E-08	2.1E-08	1.2E-08	1.1E-08	2.6E-07
UCART1	655257	4182863	655257	4182863	1.71248	0.00169873	2.4E-07	4.0E-06	2.6E-07	2.5E-07	1.2E-07	7.0E-08	1.9E-08	1.1E-08	1.0E-08	2.5E-07
UCART1	655297	4182863	655297	4182863	1.66348	0.00169872	2.3E-07	3.8E-06	2.4E-07	2.3E-07	1.1E-07	6.5E-08	1.8E-08	1.0E-08	9.5E-08	2.4E-07
UCART1	655337	4182863	655337	4182863	1.61599	0.00169871	2.2E-07	3.6E-06	2.2E-07	2.1E-07	1.0E-07	6.0E-08	1.7E-08	9.5E-08	9.0E-08	2.3E-07
UCART1	655377	4182863	655377	4182863	1.57084	0.00169870	2.1E-07	3.4E-06	2.0E-07	1.9E-07	9.5E-08	5.5E-08	1.6E-08	9.0E-08	8.5E-08	2.2E-07
UCART1	655417	4182863	655417	4182863	1.52826	0.00169869	2.0E-07	3.2E-06	1.8E-07	1.7E-07	9.0E-08	5.0E-08	1.5E-08	8.5E-08	8.0E-08	2.1E-07
UCART1	655457	4182863	655457	4182863	1.48881	0.00169868	1.9E-07	3.0E-06	1.6E-07	1.5E-07	8.5E-08	4.5E-08	1.4E-08	8.0E-08	7.5E-08	2.0E-07
UCART1	655497	4182863	655497	4182863	1.45149	0.00169867	1.8E-07	2.8E-06	1.4E-07	1.3E-07	8.0E-08	4.0E-08	1.3E-08	7.5E-08	7.0E-08	1.9E-07
UCART1	655537	4182863	655537	4182863	1.41617	0.00169866	1.7E-07	2.6E-06	1.2E-07	1.1E-07	7.5E-08	3.5E-08	1.2E-08	7.0E-08	6.5E-08	1.8E-07
UCART1	655577	4182863	655577	4182863	1.38285	0.00169865	1.6E-07	2.4E-06	1.0E-07	9.5E-08	7.0E-08	3.0E-08	1.1E-08	6.5E-08	6.0E-08	1.7E-07
UCART1	655617	4182863	655617	4182863	1.35153	0.00169864	1.5E-07	2.2E-06	9.0E-08	8.5E-08	6.5E-08	2.5E-08	1.0E-08	6.0E-08	5.5E-08	1.6E-07
UCART1	655657	4182863	655657	4182863	1.32121	0.00169863	1.4E-07	2.0E-06	8.0E-08	7.5E-08	5.5E-08	2.0E-08	9.5E-08	5.0E-08	4.5E-08	1.5E-07
UCART1	655697	4182863	655697	4182863	1.29189	0.00169862	1.3E-07	1.8E-06	7.0E-08	6.5E-08	4.5E-08	1.5E-08	8.5E-08	4.5E-08	4.0E-08	1.4E-07
UCART1	655737	4182863	655737	4182863	1.26357	0.00169861	1.2E-07	1.6E-06	6.0E-08	5.5E-08	3.5E-08	1.2E-08	7.5E-08	3.5E-08	3.0E-08	1.3E-07
UCART1	655777	4182863	655777	4182863	1.23625	0.00169860	1.1E-07	1.4E-06	5.0E-08	4.5E-08	2.5E-08	8.5E-08	3.0E-08	2.5E-08	2.0E-08	1.2E-07
UCART1	655817	4182863	655817	4182863	1.21000	0.00169859	1.0E-07	1.2E-06	4.0E-08	3.5E-08	1.5E-08	5.5E-08	2.5E-08	2.0E-08	1.5E-08	1

UCART1	6537787	4183033	6537787	4183033	21	005990041	2.1E-06	6.3E-06	3.6E-06	3.8E-06	1.5E-06	7.4E-07	1.8E-07	1.1E-07	9.9E-08	2.1E-08	4.2E-07
UCART1	654387	4183033	654387	4183033	13	000202024	7.8E-07	2.4E-07	2.5E-07	1.5E-07	2.8E-07	6.0E-08	4.2E-07	2.8E-07	6.0E-08	4.2E-07	2.8E-07
UCART1	654387	4183033	654387	4183033	15	000202071	7.6E-07	2.3E-06	1.3E-06	1.1E-06	5.5E-07	2.7E-06	6.0E-08	4.0E-08	3.6E-08	7.5E-08	1.5E-07
UCART1	6543787	4183033	6543787	4183033	14	000200495	7.9E-07	2.7E-06	1.3E-06	1.1E-06	5.2E-07	2.6E-06	6.3E-08	3.8E-08	3.4E-08	7.5E-08	1.5E-07
UCART1	6544187	4183033	6544187	4183033	14	000194482	6.9E-07	1.4E-06	1.2E-06	1.1E-06	5.8E-07	2.5E-06	5.5E-08	3.6E-08	3.4E-08	7.5E-08	1.5E-07
UCART1	6545857	4183033	6545857	4183033	14	000197066	6.5E-07	2.0E-06	1.1E-06	1.0E-06	4.7E-07	2.3E-06	5.6E-08	3.4E-08	3.1E-08	6.7E-08	1.3E-07
UCART1	6546857	4183033	6546857	4183033	14	000194482	6.1E-07	1.8E-06	1.1E-06	1.0E-06	4.7E-07	2.2E-06	5.1E-08	3.1E-08	2.8E-08	6.0E-08	1.2E-07
UCART1	6546387	4183033	6546387	4183033	14	000142735	5.9E-07	1.7E-06	1.0E-06	9.0E-07	4.1E-07	2.0E-06	4.0E-08	3.0E-08	2.7E-08	5.6E-08	1.1E-07
UCART1	6546787	4183033	6546787	4183033	14	000142735	5.3E-07	1.6E-06	9.0E-07	8.5E-07	3.9E-07	1.9E-06	4.6E-08	2.8E-08	2.5E-08	5.5E-08	1.1E-07
UCART1	6546187	4183033	6546187	4183033	14	000142735	6.0E-07	1.5E-06	9.0E-07	8.5E-07	3.9E-07	1.9E-06	4.6E-08	2.8E-08	2.5E-08	5.5E-08	1.1E-07
UCART1	6546857	4183033	6546857	4183033	14	000150008	4.7E-07	1.4E-06	8.2E-07	7.9E-07	3.4E-07	1.7E-06	4.0E-08	2.5E-08	2.2E-08	4.7E-08	9.4E-08
UCART1	654697	4183033	654697	4183033	14	000150008	2.9E-06	1.6E-06	1.1E-06	1.0E-06	5.2E-07	2.3E-06	8.0E-08	4.9E-08	4.4E-08	9.6E-08	1.9E-07
UCART1	654787	4183033	654787	4183033	14	000158558	4.1E-07	1.2E-06	7.2E-07	6.9E-07	3.0E-07	1.5E-06	3.5E-08	2.2E-08	2.0E-08	4.3E-08	8.7E-08
UCART1	6547787	4183033	6547787	4183033	14	000151271	3.9E-07	1.2E-06	7.2E-07	6.9E-07	3.0E-07	1.4E-06	3.3E-08	2.1E-08	1.9E-08	4.0E-08	7.7E-08
UCART1	6548187	4183033	6548187	4183033	14	000150374	3.6E-07	1.1E-06	6.8E-07	6.5E-07	2.8E-07	1.4E-06	3.1E-08	2.0E-08	1.8E-08	3.8E-08	7.4E-08
UCART1	6548587	4183033	6548587	4183033	14	000098357	3.4E-07	1.0E-06	6.0E-07	5.4E-07	2.5E-07	1.2E-06	2.9E-08	1.8E-08	1.6E-08	3.5E-08	6.8E-08
UCART1	654987	4183033	654987	4183033	14	000098357	2.3E-06	1.2E-06	7.6E-07	6.6E-07	3.1E-07	1.5E-06	3.7E-08	2.3E-08	2.1E-08	4.3E-08	8.6E-08
UCART1	6549387	4183033	6549387	4183033	14	000074548	3.0E-07	9.1E-07	5.8E-07	4.8E-07	2.1E-07	1.1E-06	2.6E-08	1.6E-08	1.4E-08	3.1E-08	6.1E-08
UCART1	6549787	4183033	6549787	4183033	14	000062529	2.9E-07	8.6E-07	5.5E-07	4.5E-07	2.1E-07	1.0E-06	2.5E-08	1.5E-08	1.4E-08	3.0E-08	5.7E-08
UCART1	655087	4183033	655087	4183033	14	000079231	2.4E-07	7.4E-07	4.6E-07	3.6E-07	1.6E-07	8.7E-07	2.1E-08	1.3E-08	1.2E-08	2.5E-08	4.9E-08
UCART1	655087	4183033	655087	4183033	14	000074104	2.4E-07	7.4E-07	4.6E-07	3.6E-07	1.6E-07	8.7E-07	2.1E-08	1.3E-08	1.2E-08	2.5E-08	4.9E-08
UCART1	6550987	4183033	6550987	4183033	14	000086509	3.0E-07	9.0E-07	5.7E-07	4.7E-07	2.2E-07	1.1E-06	2.6E-08	1.6E-08	1.4E-08	3.1E-08	6.0E-08
UCART1	655387	4183033	655387	4183033	14	000237572	8.2E-07	2.5E-06	1.4E-06	1.3E-06	5.9E-07	2.9E-06	7.1E-08	4.3E-08	3.9E-08	8.5E-08	1.6E-07
UCART1	655387	4183033	655387	4183033	14	000086509	1.2E-06	3.6E-06	2.1E-06	1.9E-06	8.7E-07	4.3E-06	1.0E-07	6.3E-08	5.7E-08	1.2E-07	2.4E-07
UCART1	6558187	4183033	6558187	4183033	14	000055728	1.1E-06	3.2E-06	1.8E-06	1.7E-06	7.4E-07	3.8E-06	9.1E-08	5.5E-08	5.0E-08	1.1E-07	2.1E-07
UCART1	655987	4183033	655987	4183033	14	000086509	1.2E-06	3.6E-06	2.1E-06	1.9E-06	8.7E-07	4.3E-06	1.0E-07	6.3E-08	5.7E-08	1.2E-07	2.4E-07
UCART1	655987	4183033	655987	4183033	14	000391533	1.4E-06	4.1E-06	2.4E-06	2.1E-06	9.8E-07	4.8E-06	1.2E-07	7.1E-08	6.4E-08	1.4E-07	2.7E-07
UCART1	6543387	4183033	6543387	4183033	14	000169398	5.9E-07	1.8E-06	1.0E-06	9.6E-07	4.2E-07	2.1E-06	5.1E-08	3.1E-08	2.8E-08	6.1E-08	1.2E-07
UCART1	6543787	4183033	6543787	4183033	14	000169398	5.2E-07	1.7E-06	9.6E-07	9.0E-07	4.1E-07	2.0E-06	4.9E-08	3.0E-08	2.7E-08	5.6E-08	1.1E-07
UCART1	6544187	4183033	6544187	4183033	14	000158636	5.5E-07	1.7E-06	9.6E-07	9.0E-07	4.2E-07	2.1E-06	5.2E-08	3.1E-08	2.8E-08	6.1E-08	1.2E-07
UCART1	654467	4183033	654467	4183033	14	000150788	5.5E-07	1.8E-06	1.0E-06	9.6E-07	4.2E-07	2.1E-06	5.4E-08	3.2E-08	2.9E-08	6.2E-08	1.2E-07
UCART1	6544987	4183033	6544987	4183033	14	000146248	5.1E-07	1.5E-06	8.9E-07	8.7E-07	3.7E-07	1.8E-06	4.4E-08	2.7E-08	2.4E-08	5.2E-08	1.0E-07
UCART1	6545387	4183033	6545387	4183033	14	000139582	4.8E-07	1.5E-06	8.9E-07	7.7E-07	3.5E-07	1.7E-06	4.2E-08	2.5E-08	2.3E-08	5.0E-08	9.7E-08
UCART1	6545787	4183033	6545787	4183033	14	000139582	4.6E-07	1.4E-06	8.0E-07	7.5E-07	3.2E-07	1.6E-06	4.0E-08	2.4E-08	2.2E-08	4.8E-08	9.4E-08
UCART1	6546187	4183033	6546187	4183033	14	000126102	4.4E-07	1.3E-06	7.6E-07	6.9E-07	3.2E-07	1.6E-06	3.8E-08	2.3E-08	2.1E-08	4.5E-08	8.7E-08
UCART1	6546587	4183033	6546587	4183033	14	000126102	3.9E-07	1.2E-06	7.0E-07	6.5E-07	3.0E-07	1.5E-06	3.5E-08	2.2E-08	2.0E-08	4.3E-08	8.5E-08
UCART1	6546987	4183033	6546987	4183033	14	000113246	3.6E-07	1.2E-06	6.9E-07	2.8E-07	1.4E-06	3.4E-06	2.1E-08	1.5E-08	1.4E-08	2.9E-08	5.7E-08
UCART1	654787	4183033	654787	4183033	14	000017278	3.7E-07	1.1E-06	6.5E-07	5.9E-07	2.7E-07	1.3E-06	3.2E-08	1.9E-08	1.8E-08	3.8E-08	7.4E-08
UCART1	6547787	4183033	6547787	4183033	14	000015089	3.2E-07	1.1E-06	6.5E-07	5.9E-07	2.7E-07	1.3E-06	3.2E-08	1.9E-08	1.8E-08	3.8E-08	7.4E-08
UCART1	6548187	4183033	6548187	4183033	14	000056122	3.1E-07	1.0E-06	5.8E-07	5.1E-07	2.4E-07	1.2E-06	2.9E-08	1.7E-08	1.6E-08	3.4E-08	6.7E-08
UCART1	6548587	4183033	6548587	4183033	14	000056122	3.2E-07	1.1E-06	6.5E-07	5.9E-07	2.7E-07	1.3E-06	3.2E-08	1.9E-08	1.8E-08	3.8E-08	7.4E-08
UCART1	6548987	4183033	6548987	4183033	14	000063121	3.0E-07	9.0E-07	5.2E-07	4.7E-07	2.2E-07	1.1E-06	2.6E-08	1.6E-08	1.4E-08	3.1E-08	6.0E-08
UCART1	6549387	4183033	6549387	4183033	14	000038886	2.8E-07	8.6E-07	5.0E-07	4.5E-07	2.0E-07	1.0E-06	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.7E-08
UCART1	6549787	4183033	6549787	4183033	14	000077487	2.6E-07	8.1E-07	4.7E-07	4.3E-07	1.9E-07	9.4E-07	2.3E-08	1.4E-08	1.3E-08	2.8E-08	5.6E-08
UCART1	6550187	4183033	6550187	4183033	14	000073885	2.6E-07	7.7E-07	4.5E-07	4.1E-07	1.8E-07	9.1E-07	2.2E-08	1.3E-08	1.2E-08	2.7E-08	5.4E-08
UCART1	6550187	4183033	6550187	4183033	14	000073885	2.6E-07	7.7E-07	4.5E-07	4.1E-07	1.8E-07	9.1E-07	2.2E-08	1.3E-08	1.2E-08	2.7E-08	5.4E-08
UCART1	6550987	4183033	6550987	4183033	14	000064663	2.6E-07	7.8E-07	4.6E-07	4.2E-07	2.1E-07	1.0E-06	2.5E-08	1.5E-08	1.4E-08	3.0E-08	5.9E-08
UCART1	655387	4183033	655387	4183033	14	000237173	7.7E-07	2.3E-06	1.3E-06	1.2E-06	5.7E-07	2.7E-06	6.6E-08	4.0E-08	3.6E-08	8.0E-08	1.6E-07
UCART1	655387	4183033	655387	4183033	14	000174488	8.4E-07	2.6E-06	1.5E-06	1.4E-06	6.2E-07	3.1E-06	7.4E-08	4.5E-08	4.0E-08	8.7E-08	1.7E-07
UCART1	6558187	4183033	6558187	4183033	14	000073178	9.5E-07	2.9E-06	1.7E-06	1.5E-06	6.9E-07	3.4E-06	8.2E-08	5.0E-08	4.5E-08	9.9E-08	1.9E-07
UCART1	655987	4183033	655987	4183033	14	000073178	9.5E-07	2.9E-06	1.7E-06	1.5E-06	6.9E-07	3.4E-06	8.2E-08	5.0E-08	4.5E-08	9.9E-08	1.9E-07
UCART1	6548987	4183033	6548987	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.8E-08
UCART1	6549387	4183033	6549387	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.8E-08
UCART1	6549787	4183033	6549787	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.8E-08
UCART1	6550187	4183033	6550187	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.8E-08
UCART1	6548987	4183033	6548987	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.8E-08
UCART1	6549387	4183033	6549387	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3E-08	2.9E-08	5.8E-08
UCART1	6549787	4183033	6549787	4183033	14	000097545	2.8E-07	8.3E-07	4.8E-07	4.4E-07	2.0E-07	9.8E-07	2.4E-08	1.4E-08	1.3		

UCART1	6450687	4183543	6540687	4183543	0.98536	0.00042822	1.5E-07	4.4E-07	2.6E-07	2.3E-07	1.1E-07	5.2E-10	1.3E-08	7.7E-09	7.0E-09	1.5E-09	2.9E-08
UCART1	6450688	4183543	6540688	4183543	0.98536	0.00042822	1.5E-07	4.4E-07	2.6E-07	2.3E-07	1.1E-07	5.2E-10	1.3E-08	7.7E-09	7.0E-09	1.5E-09	2.9E-08
UCART1	6451387	4183543	6541387	4183543	0.98544	0.00041254	1.4E-07	4.3E-07	2.5E-07	2.3E-07	1.0E-07	5.1E-10	1.2E-08	7.5E-09	6.8E-09	1.5E-09	2.9E-08
UCART1	6451783	4183543	6541783	4183543	0.98505	0.00041254	1.4E-07	4.3E-07	2.5E-07	2.3E-07	1.0E-07	5.1E-10	1.2E-08	7.5E-09	6.8E-09	1.5E-09	2.9E-08
UCART1	6452179	4183543	6542179	4183543	0.98462	0.00040407	1.4E-07	4.2E-07	2.4E-07	2.1E-07	1.0E-07	5.0E-10	1.2E-08	7.4E-09	6.7E-09	1.5E-09	2.9E-08
UCART1	6452575	4183543	6542575	4183543	0.98336	0.00039724	1.4E-07	4.1E-07	2.4E-07	2.0E-07	9.8E-08	4.9E-10	1.2E-08	7.1E-09	6.5E-09	1.4E-09	2.7E-08
UCART1	6452971	4183543	6542971	4183543	0.98210	0.00039049	1.3E-07	4.0E-07	2.3E-07	1.9E-07	9.6E-08	4.8E-10	1.1E-08	6.9E-09	6.3E-09	1.3E-09	2.6E-08
UCART1	6453367	4183543	6543367	4183543	0.98084	0.00038374	1.3E-07	3.9E-07	2.2E-07	1.8E-07	9.4E-08	4.7E-10	1.1E-08	6.7E-09	6.1E-09	1.2E-09	2.5E-08
UCART1	6453763	4183543	6543763	4183543	0.97958	0.00037700	1.3E-07	3.8E-07	2.1E-07	1.7E-07	9.2E-08	4.6E-10	1.1E-08	6.6E-09	6.0E-09	1.1E-09	2.4E-08
UCART1	6454159	4183543	6544159	4183543	0.97832	0.00037025	1.3E-07	3.7E-07	2.0E-07	1.6E-07	9.0E-08	4.5E-10	1.1E-08	6.5E-09	5.9E-09	1.1E-09	2.3E-08
UCART1	6454555	4183543	6544555	4183543	0.97706	0.00036350	1.3E-07	3.6E-07	1.9E-07	1.5E-07	8.8E-08	4.4E-10	1.1E-08	6.4E-09	5.8E-09	1.1E-09	2.2E-08
UCART1	6454951	4183543	6544951	4183543	0.97580	0.00035675	1.3E-07	3.5E-07	1.8E-07	1.4E-07	8.6E-08	4.3E-10	1.1E-08	6.3E-09	5.7E-09	1.1E-09	2.1E-08
UCART1	6455347	4183543	6545347	4183543	0.97454	0.00035000	1.3E-07	3.4E-07	1.7E-07	1.3E-07	8.4E-08	4.2E-10	1.1E-08	6.2E-09	5.6E-09	1.1E-09	2.0E-08
UCART1	6455743	4183543	6545743	4183543	0.97328	0.00034325	1.3E-07	3.3E-07	1.6E-07	1.2E-07	8.2E-08	4.1E-10	1.1E-08	6.1E-09	5.5E-09	1.1E-09	1.9E-08
UCART1	6456139	4183543	6546139	4183543	0.97202	0.00033650	1.3E-07	3.2E-07	1.5E-07	1.1E-07	8.0E-08	4.0E-10	1.1E-08	6.0E-09	5.4E-09	1.1E-09	1.8E-08
UCART1	6456535	4183543	6546535	4183543	0.97076	0.00032975	1.3E-07	3.1E-07	1.4E-07	1.0E-07	7.8E-08	3.9E-10	1.1E-08	5.9E-09	5.3E-09	1.1E-09	1.7E-08
UCART1	6456931	4183543	6546931	4183543	0.96950	0.00032300	1.3E-07	3.0E-07	1.3E-07	9.8E-08	7.6E-08	3.8E-10	1.1E-08	5.8E-09	5.2E-09	1.1E-09	1.6E-08
UCART1	6457327	4183543	6547327	4183543	0.96824	0.00031625	1.3E-07	2.9E-07	1.2E-07	9.6E-08	7.4E-08	3.7E-10	1.1E-08	5.7E-09	5.1E-09	1.1E-09	1.5E-08
UCART1	6457723	4183543	6547723	4183543	0.96698	0.00030950	1.3E-07	2.8E-07	1.1E-07	9.4E-08	7.2E-08	3.6E-10	1.1E-08	5.6E-09	5.0E-09	1.1E-09	1.4E-08
UCART1	6458119	4183543	6548119	4183543	0.96572	0.00030275	1.3E-07	2.7E-07	1.0E-07	9.2E-08	7.0E-08	3.5E-10	1.1E-08	5.5E-09	4.9E-09	1.1E-09	1.3E-08
UCART1	6458515	4183543	6548515	4183543	0.96446	0.00029600	1.3E-07	2.6E-07	9.9E-08	9.0E-08	6.8E-08	3.4E-10	1.1E-08	5.4E-09	4.8E-09	1.1E-09	1.2E-08
UCART1	6458911	4183543	6548911	4183543	0.96320	0.00028925	1.3E-07	2.5E-07	9.7E-08	8.8E-08	6.6E-08	3.3E-10	1.1E-08	5.3E-09	4.7E-09	1.1E-09	1.1E-08
UCART1	6459307	4183543	6549307	4183543	0.96194	0.00028250	1.3E-07	2.4E-07	9.5E-08	8.6E-08	6.4E-08	3.2E-10	1.1E-08	5.2E-09	4.6E-09	1.1E-09	1.0E-08
UCART1	6459703	4183543	6549703	4183543	0.96068	0.00027575	1.3E-07	2.3E-07	9.3E-08	8.4E-08	6.2E-08	3.1E-10	1.1E-08	5.1E-09	4.5E-09	1.1E-09	9E-08
UCART1	6460099	4183543	6550099	4183543	0.95942	0.00026900	1.3E-07	2.2E-07	9.1E-08	8.2E-08	6.0E-08	3.0E-10	1.1E-08	5.0E-09	4.4E-09	1.1E-09	8E-08
UCART1	6460495	4183543	6550495	4183543	0.95816	0.00026225	1.3E-07	2.1E-07	8.9E-08	8.0E-08	5.8E-08	2.9E-10	1.1E-08	4.9E-09	4.3E-09	1.1E-09	7E-08
UCART1	6460891	4183543	6550891	4183543	0.95690	0.00025550	1.3E-07	2.0E-07	8.7E-08	7.8E-08	5.6E-08	2.8E-10	1.1E-08	4.8E-09	4.2E-09	1.1E-09	6E-08
UCART1	6461287	4183543	6551287	4183543	0.95564	0.00024875	1.3E-07	1.9E-07	8.5E-08	7.6E-08	5.4E-08	2.7E-10	1.1E-08	4.7E-09	4.1E-09	1.1E-09	5E-08
UCART1	6461683	4183543	6551683	4183543	0.95438	0.00024200	1.3E-07	1.8E-07	8.3E-08	7.4E-08	5.2E-08	2.6E-10	1.1E-08	4.6E-09	4.0E-09	1.1E-09	4E-08
UCART1	6462079	4183543	6552079	4183543	0.95312	0.00023525	1.3E-07	1.7E-07	8.1E-08	7.2E-08	5.0E-08	2.5E-10	1.1E-08	4.5E-09	3.9E-09	1.1E-09	3E-08
UCART1	6462475	4183543	6552475	4183543	0.95186	0.00022850	1.3E-07	1.6E-07	7.9E-08	7.0E-08	4.8E-08	2.4E-10	1.1E-08	4.4E-09	3.8E-09	1.1E-09	2E-08
UCART1	6462871	4183543	6552871	4183543	0.95060	0.00022175	1.3E-07	1.5E-07	7.7E-08	6.8E-08	4.6E-08	2.3E-10	1.1E-08	4.3E-09	3.7E-09	1.1E-09	1E-08
UCART1	6463267	4183543	6553267	4183543	0.94934	0.00021500	1.3E-07	1.4E-07	7.5E-08	6.6E-08	4.4E-08	2.2E-10	1.1E-08	4.2E-09	3.6E-09	1.1E-09	9E-08
UCART1	6463663	4183543	6553663	4183543	0.94808	0.00020825	1.3E-07	1.3E-07	7.3E-08	6.4E-08	4.2E-08	2.1E-10	1.1E-08	4.1E-09	3.5E-09	1.1E-09	8E-08
UCART1	6464059	4183543	6554059	4183543	0.94682	0.00020150	1.3E-07	1.2E-07	7.1E-08	6.2E-08	4.0E-08	2.0E-10	1.1E-08	4.0E-09	3.4E-09	1.1E-09	7E-08
UCART1	6464455	4183543	6554455	4183543	0.94556	0.00019475	1.3E-07	1.1E-07	6.9E-08	6.0E-08	3.8E-08	1.9E-10	1.1E-08	3.9E-09	3.3E-09	1.1E-09	6E-08
UCART1	6464851	4183543	6554851	4183543	0.94430	0.00018800	1.3E-07	1.0E-07	6.7E-08	5.8E-08	3.6E-08	1.8E-10	1.1E-08	3.8E-09	3.2E-09	1.1E-09	5E-08
UCART1	6465247	4183543	6555247	4183543	0.94304	0.00018125	1.3E-07	9.9E-08	6.5E-08	5.6E-08	3.4E-08	1.7E-10	1.1E-08	3.7E-09	3.1E-09	1.1E-09	4E-08
UCART1	6465643	4183543	6555643	4183543	0.94178	0.00017450	1.3E-07	9.7E-08	6.3E-08	5.4E-08	3.2E-08	1.6E-10	1.1E-08	3.6E-09	3.0E-09	1.1E-09	3E-08
UCART1	6466039	4183543	6556039	4183543	0.94052	0.00016775	1.3E-07	9.6E-08	6.1E-08	5.2E-08	3.0E-08	1.5E-10	1.1E-08	3.5E-09	2.9E-09	1.1E-09	2E-08
UCART1	6466435	4183543	6556435	4183543	0.93926	0.00016100	1.3E-07	9.5E-08	5.9E-08	5.0E-08	2.8E-08	1.4E-10	1.1E-08	3.4E-09	2.8E-09	1.1E-09	1E-08
UCART1	6466831	4183543	6556831	4183543	0.93800	0.00015425	1.3E-07	9.4E-08	5.7E-08	4.8E-08	2.6E-08	1.3E-10	1.1E-08	3.3E-09	2.7E-09	1.1E-09	9E-08
UCART1	6467227	4183543	6557227	4183543	0.93674	0.00014750	1.3E-07	9.3E-08	5.5E-08	4.6E-08	2.4E-08	1.2E-10	1.1E-08	3.2E-09	2.6E-09	1.1E-09	8E-08
UCART1	6467623	4183543	6557623	4183543	0.93548	0.00014075	1.3E-07	9.2E-08	5.3E-08	4.4E-08	2.2E-08	1.1E-10	1.1E-08	3.1E-09	2.5E-09	1.1E-09	7E-08
UCART1	6468019	4183543	6558019	4183543	0.93422	0.00013400	1.3E-07	9.1E-08	5.1E-08	4.2E-08	2.0E-08	1.0E-10	1.1E-08	3.0E-09	2.4E-09	1.1E-09	6E-08
UCART1	6468415	4183543	6558415	4183543	0.93296	0.00012725	1.3E-07	9.0E-08	4.9E-08	4.0E-08	1.8E-08	9E-11	1.1E-08	2.9E-09	2.3E-09	1.1E-09	5E-08
UCART1	6468811	4183543	6558811	4183543	0.93170	0.00012050	1.3E-07	8.9E-08	4.7E-08	3.8E-08	1.6E-08	8E-11	1.1E-08	2.8E-09	2.2E-09	1.1E-09	4E-08
UCART1	6469207	4183543	6559207	4183543	0.93044	0.00011375	1.3E-07	8.8E-08	4.5E-08	3.6E-08	1.4E-08	7E-11	1.1E-08	2.7E-09	2.1E-09	1.1E-09	3E-08
UCART1	6469603	4183543	6559603	4183543	0.92918	0.00010700	1.3E-07	8.7E-08	4.3E-08	3.4E-08	1.2E-08	6E-11	1.1E-08	2.6E-09	2.0E-09	1.1E-09	2E-08
UCART1	6470000	4183543	6560000	4183543	0.92792	0.00010025	1.3E-07	8.6E-08	4.1E-08	3.2E-08	1.0E-08	5E-11	1.1E-08	2.5E-09	1.9E-09	1.1E-09	1E-08
UCART1	6470396	4183543	6560396	4183543	0.92666	0.00009350	1.3E-07	8.5E-08	3.9E-08	3.0E-08	8E-09	4E-11	1.1E-08	2.4E-09	1.8E-09	1.1E-09	9E-08
UCART1	6470792	4183543	6560792	4183543	0.92540	0.00008675	1.3E-07	8.4E-08	3.7E-08	2.8E-08	6E-09	3E-11	1.1E-08	2.3E-09	1.7E-09	1.1E-09	8E-08
UCART1	6471188	4183543	6561188	4183543	0.92414	0.00008000	1.3E-07	8.3E-08	3.5E-08	2.6E-08	4E-09	2E-11	1.1E-08	2.2E-09	1.6E-09	1.1E-09	7E-08
UCART1	6471584	4183543	6561584	4183543	0.92288	0.00007325	1.3E-07	8.2E-08	3.3E-08	2.4E-08	2E-09	1E-11	1.1E-08	2.1E-09	1.5E-09	1.1E-09	6E-08
UCART1	6471980	4183543	6561980	4183543	0.92162	0.00006650	1.3E-07	8.1E-08	3.1E-08	2.2E-08	1E-09	9E-12	1.1E-08	2.0E-09	1.4E-09	1.1E-09	5E-08
UCART1	6472376	4183543	6562376	4183543	0.92036	0.00005975	1.3E-07	8.0E-08	2.9E-08	2.0E-08	8E-10	8E-12	1.1E-08	1.9E-09	1.3E-09	1.1E-09	4E-08
UCART1	6472772	4183543	6562772	4183543	0.91910	0.00005300	1.3E-07	7.9E-08	2.7E-08	1.8E-08	6E-10	7E-12	1.1E-08	1.8E-09	1.2E-09</		

Operational Risk - Fueling

Emissions Rate (g/s) = 432.04

Offsite Fueling

Table with columns: Discrete Receptor ID, X, Y, Concentration (µg/m³) at 1 g/s, Unmitigated, Residential Dose (µg/kg-d), and Risk by Age Group. The table lists receptors 1 through 67, each with associated coordinates and risk metrics for various age groups.

Residential DoseEst =

(Cair)^(1/4) * (BW)^(1/4) * (E)^(1/4) * (T)^(1/4)

Residential Risk = DoseEst * CPF * AF * ED / AT * FAN

- A 1 Inhalation absorption factor
C-0.2 Exposure Frequency (days/week)
EF 0.6 Exposure Frequency (hours/year)
10^-7 1.0E-06 Micrograms to milligrams conversion.
Itr to cubic meters conversion
Notes:
1 Inhalation Absorption Factor, OSHA 2015, p. 24
2 Exposure Frequency (days/week), OSHA 2015, p. 24, 2005/265 days in a year for a resident, and OSHA 2015, p. 2-7, 2005/265 days, 5 days/week, 50 weeks/year
3 Use to m conversions. Itr to cubic meters conversion, OSHA 2015, Equations 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.1.8, 4.1.9, 4.1.10, 4.1.11, 4.1.12, 4.1.13, 4.1.14, 4.1.15, 4.1.16, 4.1.17, 4.1.18, 4.1.19, 4.1.20, 4.1.21, 4.1.22, 4.1.23, 4.1.24, 4.1.25, 4.1.26, 4.1.27, 4.1.28, 4.1.29, 4.1.30, 4.1.31, 4.1.32, 4.1.33, 4.1.34, 4.1.35, 4.1.36, 4.1.37, 4.1.38, 4.1.39, 4.1.40, 4.1.41, 4.1.42, 4.1.43, 4.1.44, 4.1.45, 4.1.46, 4.1.47, 4.1.48, 4.1.49, 4.1.50, 4.1.51, 4.1.52, 4.1.53, 4.1.54, 4.1.55, 4.1.56, 4.1.57, 4.1.58, 4.1.59, 4.1.60, 4.1.61, 4.1.62, 4.1.63, 4.1.64, 4.1.65, 4.1.66, 4.1.67, 4.1.68, 4.1.69, 4.1.70, 4.1.71, 4.1.72, 4.1.73, 4.1.74, 4.1.75, 4.1.76, 4.1.77, 4.1.78, 4.1.79, 4.1.80, 4.1.81, 4.1.82, 4.1.83, 4.1.84, 4.1.85, 4.1.86, 4.1.87, 4.1.88, 4.1.89, 4.1.90, 4.1.91, 4.1.92, 4.1.93, 4.1.94, 4.1.95, 4.1.96, 4.1.97, 4.1.98, 4.1.99, 4.1.100, 4.1.101, 4.1.102, 4.1.103, 4.1.104, 4.1.105, 4.1.106, 4.1.107, 4.1.108, 4.1.109, 4.1.110, 4.1.111, 4.1.112, 4.1.113, 4.1.114, 4.1.115, 4.1.116, 4.1.117, 4.1.118, 4.1.119, 4.1.120, 4.1.121, 4.1.122, 4.1.123, 4.1.124, 4.1.125, 4.1.126, 4.1.127, 4.1.128, 4.1.129, 4.1.130, 4.1.131, 4.1.132, 4.1.133, 4.1.134, 4.1.135, 4.1.136, 4.1.137, 4.1.138, 4.1.139, 4.1.140, 4.1.141, 4.1.142, 4.1.143, 4.1.144, 4.1.145, 4.1.146, 4.1.147, 4.1.148, 4.1.149, 4.1.150, 4.1.151, 4.1.152, 4.1.153, 4.1.154, 4.1.155, 4.1.156, 4.1.157, 4.1.158, 4.1.159, 4.1.160, 4.1.161, 4.1.162, 4.1.163, 4.1.164, 4.1.165, 4.1.166, 4.1.167, 4.1.168, 4.1.169, 4.1.170, 4.1.171, 4.1.172, 4.1.173, 4.1.174, 4.1.175, 4.1.176, 4.1.177, 4.1.178, 4.1.179, 4.1.180, 4.1.181, 4.1.182, 4.1.183, 4.1.184, 4.1.185, 4.1.186, 4.1.187, 4.1.188, 4.1.189, 4.1.190, 4.1.191, 4.1.192, 4.1.193, 4.1.194, 4.1.195, 4.1.196, 4.1.197, 4.1.198, 4.1.199, 4.1.200, 4.1.201, 4.1.202, 4.1.203, 4.1.204, 4.1.205, 4.1.206, 4.1.207, 4.1.208, 4.1.209, 4.1.210, 4.1.211, 4.1.212, 4.1.213, 4.1.214, 4.1.215, 4.1.216, 4.1.217, 4.1.218, 4.1.219, 4.1.220, 4.1.221, 4.1.222, 4.1.223, 4.1.224, 4.1.225, 4.1.226, 4.1.227, 4.1.228, 4.1.229, 4.1.230, 4.1.231, 4.1.232, 4.1.233, 4.1.234, 4.1.235, 4.1.236, 4.1.237, 4.1.238, 4.1.239, 4.1.240, 4.1.241, 4.1.242, 4.1.243, 4.1.244, 4.1.245, 4.1.246, 4.1.247, 4.1.248, 4.1.249, 4.1.250, 4.1.251, 4.1.252, 4.1.253, 4.1.254, 4.1.255, 4.1.256, 4.1.257, 4.1.258, 4.1.259, 4.1.260, 4.1.261, 4.1.262, 4.1.263, 4.1.264, 4.1.265, 4.1.266, 4.1.267, 4.1.268, 4.1.269, 4.1.270, 4.1.271, 4.1.272, 4.1.273, 4.1.274, 4.1.275, 4.1.276, 4.1.277, 4.1.278, 4.1.279, 4.1.280, 4.1.281, 4.1.282, 4.1.283, 4.1.284, 4.1.285, 4.1.286, 4.1.287, 4.1.288, 4.1.289, 4.1.290, 4.1.291, 4.1.292, 4.1.293, 4.1.294, 4.1.295, 4.1.296, 4.1.297, 4.1.298, 4.1.299, 4.1.300, 4.1.301, 4.1.302, 4.1.303, 4.1.304, 4.1.305, 4.1.306, 4.1.307, 4.1.308, 4.1.309, 4.1.310, 4.1.311, 4.1.312, 4.1.313, 4.1.314, 4.1.315, 4.1.316, 4.1.317, 4.1.318, 4.1.319, 4.1.320, 4.1.321, 4.1.322, 4.1.323, 4.1.324, 4.1.325, 4.1.326, 4.1.327, 4.1.328, 4.1.329, 4.1.330, 4.1.331, 4.1.332, 4.1.333, 4.1.334, 4.1.335, 4.1.336, 4.1.337, 4.1.338, 4.1.339, 4.1.340, 4.1.341, 4.1.342, 4.1.343, 4.1.344, 4.1.345, 4.1.346, 4.1.347, 4.1.348, 4.1.349, 4.1.350, 4.1.351, 4.1.352, 4.1.353, 4.1.354, 4.1.355, 4.1.356, 4.1.357, 4.1.358, 4.1.359, 4.1.360, 4.1.361, 4.1.362, 4.1.363, 4.1.364, 4.1.365, 4.1.366, 4.1.367, 4.1.368, 4.1.369, 4.1.370, 4.1.371, 4.1.372, 4.1.373, 4.1.374, 4.1.375, 4.1.376, 4.1.377, 4.1.378, 4.1.379, 4.1.380, 4.1.381, 4.1.382, 4.1.383, 4.1.384, 4.1.385, 4.1.386, 4.1.387, 4.1.388, 4.1.389, 4.1.390, 4.1.391, 4.1.392, 4.1.393, 4.1.394, 4.1.395, 4.1.396, 4.1.397, 4.1.398, 4.1.399, 4.1.400, 4.1.401, 4.1.402, 4.1.403, 4.1.404, 4.1.405, 4.1.406, 4.1.407, 4.1.408, 4.1.409, 4.1.410, 4.1.411, 4.1.412, 4.1.413, 4.1.414, 4.1.415, 4.1.416, 4.1.417, 4.1.418, 4.1.419, 4.1.420, 4.1.421, 4.1.422, 4.1.423, 4.1.424, 4.1.425, 4.1.426, 4.1.427, 4.1.428, 4.1.429, 4.1.430, 4.1.431, 4.1.432, 4.1.433, 4.1.434, 4.1.435, 4.1.436, 4.1.437, 4.1.438, 4.1.439, 4.1.440, 4.1.441, 4.1.442, 4.1.443, 4.1.444, 4.1.445, 4.1.446, 4.1.447, 4.1.448, 4.1.449, 4.1.450, 4.1.451, 4.1.452, 4.1.453, 4.1.454, 4.1.455, 4.1.456, 4.1.457, 4.1.458, 4.1.459, 4.1.460, 4.1.461, 4.1.462, 4.1.463, 4.1.464, 4.1.465, 4.1.466, 4.1.467, 4.1.468, 4.1.469, 4.1.470, 4.1.471, 4.1.472, 4.1.473, 4.1.474, 4.1.475, 4.1.476, 4.1.477, 4.1.478, 4.1.479, 4.1.480, 4.1.481, 4.1.482, 4.1.483, 4.1.484, 4.1.485, 4.1.486, 4.1.487, 4.1.488, 4.1.489, 4.1.490, 4.1.491, 4.1.492, 4.1.493, 4.1.494, 4.1.495, 4.1.496, 4.1.497, 4.1.498, 4.1.499, 4.1.500, 4.1.501, 4.1.502, 4.1.503, 4.1.504, 4.1.505, 4.1.506, 4.1.507, 4.1.508, 4.1.509, 4.1.510, 4.1.511, 4.1.512, 4.1.513, 4.1.514, 4.1.515, 4.1.516, 4.1.517, 4.1.518, 4.1.519, 4.1.520, 4.1.521, 4.1.522, 4.1.523, 4.1.524, 4.1.525, 4.1.526, 4.1.527, 4.1.528, 4.1.529, 4.1.530, 4.1.531, 4.1.532, 4.1.533, 4.1.534, 4.1.535, 4.1.536, 4.1.537, 4.1.538, 4.1.539, 4.1.540, 4.1.541, 4.1.542, 4.1.543, 4.1.544, 4.1.545, 4.1.546, 4.1.547, 4.1.548, 4.1.549, 4.1.550, 4.1.551, 4.1.552, 4.1.553, 4.1.554, 4.1.555, 4.1.556, 4.1.557, 4.1.558, 4.1.559, 4.1.560, 4.1.561, 4.1.562, 4.1.563, 4.1.564, 4.1.565, 4.1.566, 4.1.567, 4.1.568, 4.1.569, 4.1.570, 4.1.571, 4.1.572, 4.1.573, 4.1.574, 4.1.575, 4.1.576, 4.1.577, 4.1.578, 4.1.579, 4.1.580, 4.1.581, 4.1.582, 4.1.583, 4.1.584, 4.1.585, 4.1.586, 4.1.587, 4.1.588, 4.1.589, 4.1.590, 4.1.591, 4.1.592, 4.1.593, 4.1.594, 4.1.595, 4.1.596, 4.1.597, 4.1.598, 4.1.599, 4.1.600, 4.1.601, 4.1.602, 4.1.603, 4.1.604, 4.1.605, 4.1.606, 4.1.607, 4.1.608, 4.1.609, 4.1.610, 4.1.611, 4.1.612, 4.1.613, 4.1.614, 4.1.615, 4.1.616, 4.1.617, 4.1.618, 4.1.619, 4.1.620, 4.1.621, 4.1.622, 4.1.623, 4.1.624, 4.1.625, 4.1.626, 4.1.627, 4.1.628, 4.1.629, 4.1.630, 4.1.631, 4.1.632, 4.1.633, 4.1.634, 4.1.635, 4.1.636, 4.1.637, 4.1.638, 4.1.639, 4.1.640, 4.1.641, 4.1.642, 4.1.643, 4.1.644, 4.1.645, 4.1.646, 4.1.647, 4.1.648, 4.1.649, 4.1.650, 4.1.651, 4.1.652, 4.1.653, 4.1.654, 4.1.655, 4.1.656, 4.1.657, 4.1.658, 4.1.659, 4.1.660, 4.1.661, 4.1.662, 4.1.663, 4.1.664, 4.1.665, 4.1.666, 4.1.667, 4.1.668, 4.1.669, 4.1.670, 4.1.671, 4.1.672, 4.1.673, 4.1.674, 4.1.675, 4.1.676, 4.1.677, 4.1.678, 4.1.679, 4.1.680, 4.1.681, 4.1.682, 4.1.683, 4.1.684, 4.1.685, 4.1.686, 4.1.687, 4.1.688, 4.1.689, 4.1.690, 4.1.691, 4.1.692, 4.1.693, 4.1.694, 4.1.695, 4.1.696, 4.1.697, 4.1.698, 4.1.699, 4.1.700, 4.1.701, 4.1.702, 4.1.703, 4.1.704, 4.1.705, 4.1.706, 4.1.707, 4.1.708, 4.1.709, 4.1.710, 4.1.711, 4.1.712, 4.1.713, 4.1.714, 4.1.715, 4.1.716, 4.1.717, 4.1.718, 4.1.719, 4.1.720, 4.1.721, 4.1.722, 4.1.723, 4.1.724, 4.1.725, 4.1.726, 4.1.727, 4.1.728, 4.1.729, 4.1.730, 4.1.731, 4.1.732, 4.1.733, 4.1.734, 4.1.735, 4.1.736, 4.1.737, 4.1.738, 4.1.739, 4.1.740, 4.1.741, 4.1.742, 4.1.743, 4.1.744, 4.1.745, 4.1.746, 4.1.747, 4.1.748, 4.1.749, 4.1.750, 4.1.751, 4.1.752, 4.1.753, 4.1.754, 4.1.755, 4.1.756, 4.1.757, 4.1.758, 4.1.759, 4.1.760, 4.1.761, 4.1.762, 4.1.763, 4.1.764, 4.1.765, 4.1.766, 4.1.767, 4.1.768, 4.1.769, 4.1.770, 4.1.771, 4.1.772, 4.1.773, 4.1.774, 4.1.775, 4.1.776, 4.1.777, 4.1.778, 4.1.779, 4.1.780, 4.1.781, 4.1.782, 4.1.783, 4.1.784, 4.1.785, 4.1.786, 4.1.787, 4.1.788, 4.1.789, 4.1.790, 4.1.791, 4.1.792, 4.1.793, 4.1.794, 4.1.795, 4.1.796, 4.1.797, 4.1.798, 4.1.799, 4.1.800, 4.1.801, 4.1.802, 4.1.803, 4.1.804, 4.1.805, 4.1.806, 4.1.807, 4.1.808, 4.1.809, 4.1.810, 4.1.811, 4.1.812, 4.1.813, 4.1.814, 4.1.815, 4.1.816, 4.1.817, 4.1.818, 4.1.819, 4.1.820, 4.1.821, 4.1.822, 4.1.823, 4.1.824, 4.1.825, 4.1.826, 4.1.827, 4.1.828, 4.1.829, 4.1.830, 4.1.831, 4.1.832, 4.1.833, 4.1.834, 4.1.835, 4.1.836, 4.1.837, 4.1.838, 4.1.839, 4.1.840, 4.1.841, 4.1.842, 4.1.843, 4.1.844, 4.1.845, 4.1.846, 4.1.847, 4.1.848, 4.1.849, 4.1.850, 4.1.851, 4.1.852, 4.1.853, 4.1.854, 4.1.855, 4.1.856, 4.1.857, 4.1.858, 4.1.859, 4.1.860, 4.1.861, 4.1.862, 4.1.863, 4.1.864, 4.1.865, 4.1.866, 4.1.867, 4.1.868, 4.1.869, 4.1.870, 4.1.871, 4.1.872, 4.1.873, 4.1.874, 4.1.875, 4.1.876, 4.1.877, 4.1.878, 4.1.879, 4.1.880, 4.1.881, 4.1.882, 4.1.883, 4.1.884, 4.1.885, 4.1.886, 4.1.887, 4.1.888, 4.1.889, 4.1.890, 4.1.891, 4.1.892, 4.1.893, 4.1.894, 4.1.895, 4.1.896, 4.1.897, 4.1.898, 4.1.899, 4.1.900, 4.1.901, 4.1.902, 4.1.903, 4.1.904, 4.1.905, 4.1.906, 4.1.907, 4.1.908, 4.1.909, 4.1.910, 4.1.911, 4.1.912, 4.1.913, 4.1.914, 4.1.915, 4.1.916, 4.1.917, 4.1.918, 4.1.919, 4.1.920, 4.1.921, 4.1.922, 4.1.923, 4.1.924, 4.1.925, 4.1.926, 4.1.927, 4.1.928, 4.1.929, 4.1.930, 4.1.931, 4.1.932, 4.1.933, 4.1.934, 4.1.935, 4.1.936, 4.1.937, 4.1.938, 4.1.939, 4.1.940, 4.1.941, 4.1.942, 4.1.943, 4.1.944, 4.1.945, 4.1.946, 4.1.947, 4.1.948, 4.1.949, 4.1.950, 4.1.951, 4.1.952, 4.1.953, 4.1.954, 4.1.955, 4.1.956, 4.1.957, 4.1.958, 4.1.959, 4.1.960, 4.1.961, 4.1.962, 4.1.963, 4.1.964, 4.1.965, 4.1.966, 4.1.967, 4.1.968, 4.1.969, 4.1.970, 4.1.971, 4.1.972, 4.1.973, 4.1.974, 4.1.975, 4.1.976, 4.1.977, 4.1.978, 4.1.979, 4.1.980, 4.1.981, 4.1.982, 4.1.983, 4.1.984, 4.1.985, 4.1.986, 4.1.987, 4.1.988, 4.1.989, 4.1.990, 4.1.991, 4.1.992, 4.1.993, 4.1.994, 4.1.995, 4.1.996, 4.1.997, 4.1.998, 4.1.999, 4.1.1000

### UCARTS	633387	4182543	633387	4182543	211867	0.00091128	0.0E+00	#####	5.507	5.507	5.0E+07	3.3E+07	0.0E+00	0.0E+00	3.4E+09	1.6E+08	1.5E+08	3.3E+09	3.8E+08
### UCARTS	633390	4182543	633390	4182543	211877	0.00095544	0.0E+00	#####	5.4E+07	5.4E+07	3.3E+07	3.3E+07	0.0E+00	0.0E+00	3.4E+09	1.7E+08	1.5E+08	3.3E+09	3.8E+08
### UCARTS	634187	4182543	634187	4182543	217895	0.00170114	0.0E+00	#####	1.1E+08	6.5E+07	5.0E+07	2.7E+07	0.0E+00	0.0E+00	4.0E+09	1.9E+08	1.8E+08	3.8E+09	4.4E+08
### UCARTS	634587	4182543	634587	4182543	217345	0.00116750	0.0E+00	#####	1.1E+08	7.0E+07	6.4E+07	2.9E+07	0.0E+00	0.0E+00	4.0E+09	2.0E+08	1.9E+08	4.2E+09	4.6E+08
### UCARTS	634987	4182543	634987	4182543	217374	0.00173987	0.0E+00	#####	1.1E+08	7.0E+07	7.0E+07	3.0E+07	0.0E+00	0.0E+00	4.0E+09	2.0E+08	1.9E+08	4.2E+09	4.6E+08
### UCARTS	635387	4182543	635387	4182543	217295	0.00140777	0.0E+00	#####	1.1E+08	8.5E+07	7.7E+07	3.5E+07	0.0E+00	0.0E+00	5.3E+09	2.5E+08	2.3E+08	5.1E+09	5.8E+08
### UCARTS	635787	4182543	635787	4182543	217324	0.00152313	0.0E+00	#####	1.1E+08	8.5E+07	8.5E+07	3.6E+07	0.0E+00	0.0E+00	5.3E+09	2.5E+08	2.3E+08	5.1E+09	5.8E+08
### UCARTS	636187	4182543	636187	4182543	218623	0.00174556	0.0E+00	#####	1.1E+08	1.0E+08	9.4E+07	4.3E+07	0.0E+00	0.0E+00	4.0E+09	2.0E+08	1.9E+08	4.2E+09	4.6E+08
### UCARTS	636587	4182543	636587	4182543	217205	0.00190488	0.0E+00	#####	2.2E+08	1.1E+08	1.1E+08	4.8E+07	0.0E+00	0.0E+00	7.1E+09	3.3E+08	3.1E+08	8.8E+09	7.8E+08
### UCARTS	636987	4182543	636987	4182543	217234	0.0019778	0.0E+00	#####	2.2E+08	1.1E+08	1.2E+08	5.4E+07	0.0E+00	0.0E+00	7.1E+09	3.3E+08	3.1E+08	8.8E+09	7.8E+08
### UCARTS	637387	4182543	637387	4182543	217262	0.00248472	0.0E+00	#####	2.2E+08	1.1E+08	1.4E+08	6.2E+07	0.0E+00	0.0E+00	9.3E+09	4.3E+08	4.1E+08	1.1E+10	1.0E+09
### UCARTS	637787	4182543	637787	4182543	217291	0.00259987	0.0E+00	#####	2.2E+08	1.1E+08	1.6E+08	7.4E+07	0.0E+00	0.0E+00	9.3E+09	4.3E+08	4.1E+08	1.1E+10	1.0E+09
### UCARTS	638187	4182543	638187	4182543	218242	0.00356236	0.0E+00	#####	3.3E+08	2.1E+08	2.0E+08	9.0E+07	0.0E+00	0.0E+00	1.1E+10	6.2E+08	5.9E+08	1.3E+10	1.1E+09
### UCARTS	638587	4182543	638587	4182543	216549	0.00412664	0.0E+00	#####	3.3E+08	2.1E+08	2.3E+08	1.0E+08	0.0E+00	0.0E+00	1.4E+10	7.3E+08	6.9E+08	1.5E+10	1.3E+09
### UCARTS	638987	4182543	638987	4182543	216578	0.00499648	0.0E+00	#####	3.3E+08	2.1E+08	2.5E+08	1.2E+08	0.0E+00	0.0E+00	1.7E+10	8.4E+08	7.9E+08	1.8E+10	1.6E+09
### UCARTS	639387	4182543	639387	4182543	211388	0.00489025	0.0E+00	#####	3.3E+08	2.1E+08	2.7E+08	1.2E+08	0.0E+00	0.0E+00	1.8E+10	8.4E+08	8.0E+08	1.8E+10	1.6E+09
### UCARTS	642587	4182543	642587	4182543	217234	0.00524959	0.0E+00	#####	3.3E+08	2.1E+08	2.8E+08	1.3E+08	0.0E+00	0.0E+00	2.0E+10	9.5E+08	9.0E+08	2.0E+10	1.8E+09
### UCARTS	642987	4182543	642987	4182543	211747	0.00494955	0.0E+00	#####	3.3E+08	2.1E+08	2.7E+08	1.2E+08	0.0E+00	0.0E+00	1.8E+10	8.4E+08	8.1E+08	1.8E+10	1.6E+09
### UCARTS	643387	4182543	643387	4182543	213045	0.00465367	0.0E+00	#####	3.3E+08	2.1E+08	2.6E+08	1.1E+08	0.0E+00	0.0E+00	1.7E+10	8.4E+08	7.9E+08	1.8E+10	1.6E+09
### UCARTS	643787	4182543	643787	4182543	213074	0.00500588	0.0E+00	#####	3.3E+08	2.1E+08	2.8E+08	1.2E+08	0.0E+00	0.0E+00	1.9E+10	9.5E+08	9.0E+08	1.9E+10	1.8E+09
### UCARTS	644187	4182543	644187	4182543	213103	0.00535809	0.0E+00	#####	3.3E+08	2.1E+08	2.9E+08	1.3E+08	0.0E+00	0.0E+00	2.0E+10	9.5E+08	9.0E+08	2.0E+10	1.8E+09
### UCARTS	644587	4182543	644587	4182543	213132	0.00571030	0.0E+00	#####	3.3E+08	2.1E+08	3.0E+08	1.4E+08	0.0E+00	0.0E+00	2.1E+10	1.0E+09	9.5E+08	2.1E+10	1.9E+09
### UCARTS	644987	4182543	644987	4182543	213161	0.00606251	0.0E+00	#####	3.3E+08	2.1E+08	3.1E+08	1.5E+08	0.0E+00	0.0E+00	2.2E+10	1.0E+09	9.5E+08	2.2E+10	1.9E+09
### UCARTS	645387	4182543	645387	4182543	213190	0.00641472	0.0E+00	#####	3.3E+08	2.1E+08	3.2E+08	1.6E+08	0.0E+00	0.0E+00	2.3E+10	1.0E+09	9.5E+08	2.3E+10	1.9E+09
### UCARTS	645787	4182543	645787	4182543	213219	0.00676693	0.0E+00	#####	3.3E+08	2.1E+08	3.3E+08	1.7E+08	0.0E+00	0.0E+00	2.4E+10	1.0E+09	9.5E+08	2.4E+10	1.9E+09
### UCARTS	646187	4182543	646187	4182543	213248	0.00711914	0.0E+00	#####	3.3E+08	2.1E+08	3.4E+08	1.8E+08	0.0E+00	0.0E+00	2.5E+10	1.0E+09	9.5E+08	2.5E+10	1.9E+09
### UCARTS	646587	4182543	646587	4182543	213277	0.00747135	0.0E+00	#####	3.3E+08	2.1E+08	3.5E+08	1.9E+08	0.0E+00	0.0E+00	2.6E+10	1.0E+09	9.5E+08	2.6E+10	1.9E+09
### UCARTS	646987	4182543	646987	4182543	213306	0.00782356	0.0E+00	#####	3.3E+08	2.1E+08	3.6E+08	2.0E+08	0.0E+00	0.0E+00	2.7E+10	1.0E+09	9.5E+08	2.7E+10	1.9E+09
### UCARTS	647387	4182543	647387	4182543	213335	0.00817577	0.0E+00	#####	3.3E+08	2.1E+08	3.7E+08	2.1E+08	0.0E+00	0.0E+00	2.8E+10	1.0E+09	9.5E+08	2.8E+10	1.9E+09
### UCARTS	647787	4182543	647787	4182543	213364	0.00852798	0.0E+00	#####	3.3E+08	2.1E+08	3.8E+08	2.2E+08	0.0E+00	0.0E+00	2.9E+10	1.0E+09	9.5E+08	2.9E+10	1.9E+09
### UCARTS	648187	4182543	648187	4182543	213393	0.00888019	0.0E+00	#####	3.3E+08	2.1E+08	3.9E+08	2.3E+08	0.0E+00	0.0E+00	3.0E+10	1.0E+09	9.5E+08	3.0E+10	1.9E+09
### UCARTS	648587	4182543	648587	4182543	213422	0.00923240	0.0E+00	#####	3.3E+08	2.1E+08	4.0E+08	2.4E+08	0.0E+00	0.0E+00	3.1E+10	1.0E+09	9.5E+08	3.1E+10	1.9E+09
### UCARTS	648987	4182543	648987	4182543	213451	0.00958461	0.0E+00	#####	3.3E+08	2.1E+08	4.1E+08	2.5E+08	0.0E+00	0.0E+00	3.2E+10	1.0E+09	9.5E+08	3.2E+10	1.9E+09
### UCARTS	649387	4182543	649387	4182543	213480	0.01000000	0.0E+00	#####	3.3E+08	2.1E+08	4.2E+08	2.6E+08	0.0E+00	0.0E+00	3.3E+10	1.0E+09	9.5E+08	3.3E+10	1.9E+09
### UCARTS	649787	4182543	649787	4182543	213509	0.01041541	0.0E+00	#####	3.3E+08	2.1E+08	4.3E+08	2.7E+08	0.0E+00	0.0E+00	3.4E+10	1.0E+09	9.5E+08	3.4E+10	1.9E+09
### UCARTS	650187	4182543	650187	4182543	213538	0.01083082	0.0E+00	#####	3.3E+08	2.1E+08	4.4E+08	2.8E+08	0.0E+00	0.0E+00	3.5E+10	1.0E+09	9.5E+08	3.5E+10	1.9E+09
### UCARTS	650587	4182543	650587	4182543	213567	0.01124623	0.0E+00	#####	3.3E+08	2.1E+08	4.5E+08	2.9E+08	0.0E+00	0.0E+00	3.6E+10	1.0E+09	9.5E+08	3.6E+10	1.9E+09
### UCARTS	650987	4182543	650987	4182543	213596	0.01166164	0.0E+00	#####	3.3E+08	2.1E+08	4.6E+08	3.0E+08	0.0E+00	0.0E+00	3.7E+10	1.0E+09	9.5E+08	3.7E+10	1.9E+09
### UCARTS	651387	4182543	651387	4182543	213625	0.01207705	0.0E+00	#####	3.3E+08	2.1E+08	4.7E+08	3.1E+08	0.0E+00	0.0E+00	3.8E+10	1.0E+09	9.5E+08	3.8E+10	1.9E+09
### UCARTS	651787	4182543	651787	4182543	213654	0.01249246	0.0E+00	#####	3.3E+08	2.1E+08	4.8E+08	3.2E+08	0.0E+00	0.0E+00	3.9E+10	1.0E+09	9.5E+08	3.9E+10	1.9E+09
### UCARTS	652187	4182543	652187	4182543	213683	0.01290787	0.0E+00	#####	3.3E+08	2.1E+08	4.9E+08	3.3E+08	0.0E+00	0.0E+00	4.0E+10	1.0E+09	9.5E+08	4.0E+10	1.9E+09
### UCARTS	652587	4182543	652587	4182543	213712	0.01332328	0.0E+00	#####	3.3E+08	2.1E+08	5.0E+08	3.4E+08	0.0E+00	0.0E+00	4.1E+10	1.0E+09	9.5E+08	4.1E+10	1.9E+09
### UCARTS	652987	4182543	652987	4182543	213741	0.01373869	0.0E+00	#####	3.3E+08	2.1E+08	5.1E+08	3.5E+08	0.0E+00	0.0E+00	4.2E+10	1.0E+09	9.5E+08	4.2E+10	1.9E+09
### UCARTS	653387	4182543	653387	4182543	213770	0.01415410	0.0E+00	#####	3.3E+08	2.1E+08	5.2E+08	3.6E+08	0.0E+00	0.0E+00	4.3E+10	1.0E+09	9.5E+08	4.3E+10	1.9E+09
### UCARTS	653787	4182543	653787	4182543	213799	0.01456951	0.0E+00	#####	3.3E+08	2.1E+08	5.3E+08	3.7E+08	0.0E+00	0.0E+00	4.4E+10	1.0E+09	9.5E+08	4.4E+10	1.9E+09
### UCARTS	654187	4182543	654187	4182543	213828	0.01498492	0.0E+00	#####	3.3E+08	2.1E+08	5.4E+08	3.8E+08	0.0E+00	0.0E+00	4.5E+10	1.0E+09	9.5E+08	4.5E+10	1.9E+09
### UCARTS	654587	4182543	654587	4182543	213857	0.01540033	0.0E+00	#####	3.3E+08	2.1E+08	5.5E+08	3.9E+08	0.0E+00	0.0E+00	4.6E+10	1.0E+09	9.5E+08	4.6E+10	1.9E+09
### UCARTS	654987	4182543	654987	4182543	213886	0.01581574	0.0E+00	#####	3.3E+08	2.1E+08	5.6E+08	4.0E+08	0.0E+00	0.0E+00	4.7E+10	1.0E+09	9.5E+08	4.7E+10	1.9E+09
### UCARTS	655387	4182543	655387	4182543	213915	0.01623115	0.0E+00	#####	3.3E+08	2.1E+08	5.7E+08	4.1E+08	0.0E+00	0.0E+00	4.8E+10	1.0E+09	9.5E+08	4.8E+10	1.9E+09
### UCARTS	655787	4182543	655787	4182543	213944	0.01664656	0.0E+00	#####	3.3E+08	2.1E+08	5.8E+08	4.2E+08	0.0E+00	0.0E+00	4.9E+10	1.0E+09	9.5E+08	4.9E+10	1.9E+09
### UCARTS	656187	4182543	656187	4182543	213973	0.01706197	0.0E+00	#####	3.3E+08	2.1E+08	5.9E+08	4.3E+08	0.0E+00	0.0E+00	5.0E+10	1.0E+09	9.5E+08	5.0E+10	1.9E+09
### UCARTS	656587	4182543	656587	4182543	214002	0.01747738	0.0E+00	#####	3.3E+08	2.1E+08	6.0E+08	4.4E+08	0.0E+00	0.0E+00	5.1E+10	1.0E+09	9.5E+08	5.1E+10	1.9E+09
### UCARTS	656987	4182543	656987	4182543	214031	0.01789279	0.0E+00	#####	3.3E+08	2.1E+08	6.1E+08								

UCART1	653187	4182703	653187.7, 4182703.3	1.92866	0.00029951	0.0E+00	#####	8.707	5.807	4.5E+07	2.1E+07	0.0E+00	0.0E+00	3.1E+09	1.5E+08	1.4E+08	3.0E+09	3.4E+08
UCART1	653187	4182703	653187.7, 4182703.3	1.92866	0.00029951	0.0E+00	#####	8.707	5.807	4.5E+07	2.1E+07	0.0E+00	0.0E+00	3.1E+09	1.5E+08	1.4E+08	3.0E+09	3.4E+08
UCART1	653187	4182703	653187.7, 4182703.3	2.23108	0.00096929	0.0E+00	#####	11.0E+06	5.8E+07	5.3E+07	2.4E+07	0.0E+00	0.0E+00	3.6E+09	1.7E+08	1.6E+08	3.4E+09	4.0E+08
UCART1	653267	4182703	653267.0, 4182703.0	2.41551	0.00130896	0.0E+00	#####	11.0E+06	6.8E+07	5.7E+07	2.6E+07	0.0E+00	0.0E+00	3.9E+09	1.9E+08	1.7E+08	3.7E+09	4.3E+08
UCART1	653267	4182703	653267.0, 4182703.0	2.62113	0.00171277	0.0E+00	#####	11.0E+06	6.8E+07	5.7E+07	2.6E+07	0.0E+00	0.0E+00	4.2E+09	2.0E+08	1.8E+08	4.0E+09	4.7E+08
UCART1	653337	4182703	653337.0, 4182703.0	2.85915	0.00129774	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	4.4E+09	2.2E+08	2.0E+08	4.4E+09	5.1E+08
UCART1	653377	4182703	653377.0, 4182703.0	3.05313	0.00160344	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	4.7E+09	2.4E+08	2.2E+08	4.7E+09	5.6E+08
UCART1	653417	4182703	653417.0, 4182703.0	3.45489	0.00148603	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	5.5E+09	2.6E+08	2.4E+08	5.1E+09	6.1E+08
UCART1	653457	4182703	653457.0, 4182703.0	3.8311	0.00148603	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	6.2E+09	2.9E+08	2.7E+08	5.8E+09	6.8E+08
UCART1	653497	4182703	653497.0, 4182703.0	4.28647	0.00120859	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	6.9E+09	3.2E+08	3.0E+08	6.6E+09	7.7E+08
UCART1	653537	4182703	653537.0, 4182703.0	4.83601	0.00120859	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	7.8E+09	3.4E+08	3.2E+08	7.5E+09	8.8E+08
UCART1	653577	4182703	653577.0, 4182703.0	5.48655	0.00120859	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	8.7E+09	3.6E+08	3.4E+08	8.4E+09	9.8E+08
UCART1	653617	4182703	653617.0, 4182703.0	6.13672	0.00273936	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.0E+10	4.0E+08	3.8E+08	1.0E+10	1.1E+09
UCART1	653657	4182703	653657.0, 4182703.0	7.45301	0.00120568	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.2E+10	4.4E+08	4.1E+08	1.2E+10	1.4E+09
UCART1	653697	4182703	653697.0, 4182703.0	8.18544	0.00130828	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.4E+10	4.7E+08	4.5E+08	1.4E+10	1.6E+09
UCART1	653737	4182703	653737.0, 4182703.0	10.72252	0.00461958	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.7E+10	5.1E+08	4.8E+08	1.7E+10	1.9E+09
UCART1	653777	4182703	653777.0, 4182703.0	11.47389	0.00130828	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	2.1E+10	5.5E+08	5.2E+08	2.1E+10	2.4E+09
UCART1	653977	4182703	653977.0, 4182703.0	55.96738	0.00331778	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	8.8E+10	4.2E+07	4.0E+07	8.8E+10	9.8E+07
UCART1	654017	4182703	654017.0, 4182703.0	66.81895	0.02874088	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.1E+11	5.0E+07	4.7E+07	1.1E+11	1.2E+08
UCART1	654057	4182703	654057.0, 4182703.0	65.33763	0.00130828	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.2E+11	5.3E+07	5.0E+07	1.2E+11	1.4E+08
UCART1	654097	4182703	654097.0, 4182703.0	55.01088	0.02366119	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	8.8E+10	4.1E+07	3.9E+07	8.8E+10	9.8E+07
UCART1	654137	4182703	654137.0, 4182703.0	41.27889	0.01846721	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	5.6E+10	3.3E+07	3.1E+07	5.6E+10	6.7E+07
UCART1	654177	4182703	654177.0, 4182703.0	31.61878	0.01446007	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	5.4E+10	3.5E+07	3.4E+07	5.4E+10	6.5E+07
UCART1	654217	4182703	654217.0, 4182703.0	26.42655	0.01136638	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	4.2E+10	2.8E+07	2.7E+07	4.2E+10	4.7E+07
UCART1	654257	4182703	654257.0, 4182703.0	21.17205	0.00910573	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.4E+10	2.6E+07	2.5E+07	3.4E+10	3.8E+07
UCART1	654297	4182703	654297.0, 4182703.0	17.29234	0.00741761	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	2.8E+10	2.3E+07	2.2E+07	2.8E+10	3.1E+07
UCART1	654337	4182703	654337.0, 4182703.0	14.37489	0.00610923	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	2.3E+10	1.9E+07	1.8E+07	2.3E+10	2.6E+07
UCART1	654377	4182703	654377.0, 4182703.0	12.13411	0.00512109	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.9E+10	1.6E+07	1.5E+07	1.9E+10	2.2E+07
UCART1	654417	4182703	654417.0, 4182703.0	10.37902	0.00444232	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.7E+10	1.4E+07	1.3E+07	1.7E+10	1.9E+07
UCART1	654457	4182703	654457.0, 4182703.0	8.90294	0.00378785	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.3E+10	1.1E+07	1.0E+07	1.3E+10	1.4E+07
UCART1	654497	4182703	654497.0, 4182703.0	7.84861	0.00317835	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	1.1E+10	9.0E+06	8.8E+06	1.1E+10	1.2E+07
UCART1	654537	4182703	654537.0, 4182703.0	6.92069	0.00267926	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	9.0E+09	8.4E+06	8.2E+06	9.0E+09	1.0E+07
UCART1	654577	4182703	654577.0, 4182703.0	6.15052	0.00224547	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	9.0E+09	8.4E+06	8.2E+06	9.0E+09	1.0E+07
UCART1	654617	4182703	654617.0, 4182703.0	5.50478	0.00192769	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	8.8E+09	8.1E+06	7.9E+06	8.8E+09	9.8E+06
UCART1	654657	4182703	654657.0, 4182703.0	5.05739	0.00132117	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	8.6E+09	7.8E+06	7.6E+06	8.6E+09	9.6E+06
UCART1	654697	4182703	654697.0, 4182703.0	4.89127	0.00119317	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	7.2E+09	7.4E+06	7.2E+06	7.2E+09	8.0E+06
UCART1	654737	4182703	654737.0, 4182703.0	4.70883	0.00107683	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	6.4E+09	6.4E+06	6.2E+06	6.4E+09	7.0E+06
UCART1	654777	4182703	654777.0, 4182703.0	3.74088	0.00160966	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	6.0E+09	6.0E+06	5.8E+06	6.0E+09	6.6E+06
UCART1	654817	4182703	654817.0, 4182703.0	3.43675	0.00147921	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	5.5E+09	5.6E+06	5.4E+06	5.5E+09	6.1E+06
UCART1	654857	4182703	654857.0, 4182703.0	3.16999	0.00130447	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	5.3E+09	5.4E+06	5.2E+06	5.3E+09	5.9E+06
UCART1	654897	4182703	654897.0, 4182703.0	2.93403	0.00126192	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	4.7E+09	4.7E+06	4.5E+06	4.7E+09	5.2E+06
UCART1	654937	4182703	654937.0, 4182703.0	2.74467	0.00119317	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	4.4E+09	4.4E+06	4.2E+06	4.4E+09	4.9E+06
UCART1	654977	4182703	654977.0, 4182703.0	2.5814	0.00109172	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	4.1E+09	4.1E+06	3.9E+06	4.1E+09	4.5E+06
UCART1	655017	4182703	655017.0, 4182703.0	2.37206	0.00101888	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.8E+09	3.8E+06	3.7E+06	3.8E+09	4.3E+06
UCART1	655057	4182703	655057.0, 4182703.0	2.2205	0.00095549	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.6E+09	3.6E+06	3.5E+06	3.6E+09	4.1E+06
UCART1	655097	4182703	655097.0, 4182703.0	2.08488	0.00089676	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.3E+09	3.3E+06	3.2E+06	3.3E+09	3.7E+06
UCART1	655137	4182703	655137.0, 4182703.0	1.96139	0.00084207	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.1E+09	3.1E+06	3.0E+06	3.1E+09	3.5E+06
UCART1	655197	4182703	655197.0, 4182703.0	1.91617	0.00084181	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.1E+09	3.1E+06	3.0E+06	3.1E+09	3.5E+06
UCART1	655237	4182703	655237.0, 4182703.0	1.80603	0.00088674	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.1E+09	3.1E+06	3.0E+06	3.1E+09	3.7E+06
UCART1	655277	4182703	655277.0, 4182703.0	1.72224	0.00095848	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.1E+09	3.1E+06	3.0E+06	3.1E+09	3.7E+06
UCART1	655317	4182703	655317.0, 4182703.0	1.60551	0.00104655	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.1E+09	3.1E+06	3.0E+06	3.1E+09	3.7E+06
UCART1	655357	4182703	655357.0, 4182703.0	1.50291	0.00109684	0.0E+00	#####	11.0E+06	7.4E+07	6.7E+07	3.1E+07	0.0E+00	0.0E+00	3.1E+09	3.1E+06	3.0E+06	3.1E+09	3.7E+06
UCART1	655397	418270																

Operational Risk - Fueling

Residential Dose =

$$[Cair] \cdot [BR/BW]^a \cdot [AF]^b \cdot [EF]^c \cdot [ED]^d \cdot [FAH]^e$$

Residential Risk = DoseEAF * CPF * ASF * ED/AT * FAH

OnSite Fueling
Emissions Rate (g/s): 4.30E-04

A Inhalation absorption factor¹
EF 0.96 Exposure Frequency (350/year)²
10⁶ L/air-cm Micrograms to milligrams conversions,
liters to cubic meters conversion³

CPF 0.1 Cancer Potency Factor for Benzene⁴
AT 70 Averaging Time⁵

Discrete Receptor ID	X	Y	X,Y	Concentration (ug/m ³) at 4 ft ⁶	Unmitigated OnSite Fueling	Dose	Risk	Age	BR/BW	ASF	FAH	ED (Dps)	Notes	
													Worker	Worker Combined
1 UCART1	653098.7	4182383.2	653098.72, 4182383.21	1.16372	5.01E-04	1.1E-07	3.9E-09	3.6E-09	230	1	1	25	1	1
2 UCART1	653138.7	4182383.2	653138.72, 4182383.21	1.22967	5.29E-04	1.2E-07	4.2E-09	3.8E-09	230	1	1	22.75	1	1
3 UCART1	653178.7	4182383.2	653178.72, 4182383.21	1.30141	5.46E-04	1.3E-07	4.7E-09	4.0E-09	230	1	1	22.75	1	1
4 UCART1	653218.7	4182383.2	653218.72, 4182383.21	1.37866	0.000592988	1.3E-07	4.7E-09	4.3E-09	230	1	1	22.75	1	1
5 UCART1	653258.7	4182383.2	653258.72, 4182383.21	1.46145	0.000628597	1.4E-07	5.0E-09	4.5E-09	230	1	1	22.75	1	1
6 UCART1	653298.7	4182383.2	653298.72, 4182383.21	1.55025	0.000667666	1.5E-07	5.3E-09	4.8E-09	230	1	1	22.75	1	1
7 UCART1	653338.7	4182383.2	653338.72, 4182383.21	1.64524	0.000707649	1.6E-07	5.6E-09	5.1E-09	230	1	1	22.75	1	1
8 UCART1	653378.7	4182383.2	653378.72, 4182383.21	1.74698	0.000751409	1.7E-07	5.9E-09	5.4E-09	230	1	1	22.75	1	1
9 UCART1	653418.7	4182383.2	653418.72, 4182383.21	1.85601	0.000798305	1.8E-07	6.3E-09	5.7E-09	230	1	1	22.75	1	1
10 UCART1	653458.7	4182383.2	653458.72, 4182383.21	1.97399	0.000849551	1.9E-07	6.7E-09	6.1E-09	230	1	1	22.75	1	1
11 UCART1	653498.7	4182383.2	653498.72, 4182383.21	2.11465	0.00090551	2.0E-07	7.2E-09	6.5E-09	230	1	1	22.75	1	1
12 UCART1	653538.7	4182383.2	653538.72, 4182383.21	2.27572	0.00097883	2.2E-07	7.7E-09	7.0E-09	230	1	1	22.75	1	1
13 UCART1	653578.7	4182383.2	653578.72, 4182383.21	2.4624	0.001071727	2.4E-07	8.4E-09	7.7E-09	230	1	1	22.75	1	1
14 UCART1	653618.7	4182383.2	653618.72, 4182383.21	2.67518	0.001184195	2.6E-07	9.3E-09	8.5E-09	230	1	1	22.75	1	1
15 UCART1	653658.7	4182383.2	653658.72, 4182383.21	3.00761	0.001331953	2.9E-07	1.0E-08	9.5E-09	230	1	1	22.75	1	1
16 UCART1	653698.7	4182383.2	653698.72, 4182383.21	3.37094	0.001507807	3.3E-07	1.2E-08	1.1E-08	230	1	1	22.75	1	1
17 UCART1	653738.7	4182383.2	653738.72, 4182383.21	3.80044	0.001714555	3.7E-07	1.3E-08	1.2E-08	230	1	1	22.75	1	1
18 UCART1	653778.7	4182383.2	653778.72, 4182383.21	4.32288	0.002003265	4.1E-07	1.5E-08	1.3E-08	230	1	1	22.75	1	1
19 UCART1	653818.7	4182383.2	653818.72, 4182383.21	4.97379	0.002336141	4.5E-07	1.6E-08	1.5E-08	230	1	1	22.75	1	1
20 UCART1	653858.7	4182383.2	653858.72, 4182383.21	4.9934	0.002347555	4.7E-07	1.7E-08	1.5E-08	230	1	1	22.75	1	1
21 UCART1	653898.7	4182383.2	653898.72, 4182383.21	5.15812	0.002418604	4.9E-07	1.7E-08	1.6E-08	230	1	1	22.75	1	1
22 UCART1	653938.7	4182383.2	653938.72, 4182383.21	6.70544	0.003079785	6.4E-07	2.3E-08	2.1E-08	230	1	1	22.75	1	1
23 UCART1	653978.7	4182383.2	653978.72, 4182383.21	6.68106	0.003195727	6.3E-07	2.2E-08	2.0E-08	230	1	1	22.75	1	1
24 UCART1	654018.7	4182383.2	654018.72, 4182383.21	6.46094	0.003178972	6.1E-07	2.2E-08	2.0E-08	230	1	1	22.75	1	1
25 UCART1	654058.7	4182383.2	654058.72, 4182383.21	6.26053	0.003169272	5.9E-07	2.1E-08	1.9E-08	230	1	1	22.75	1	1
26 UCART1	654098.7	4182383.2	654098.72, 4182383.21	6.1516	0.003187337	5.7E-07	2.0E-08	1.9E-08	230	1	1	22.75	1	1
27 UCART1	654138.7	4182383.2	654138.72, 4182383.21	5.72566	0.002462714	5.4E-07	1.9E-08	1.8E-08	230	1	1	22.75	1	1
28 UCART1	654178.7	4182383.2	654178.72, 4182383.21	5.40839	0.00232625	5.1E-07	1.8E-08	1.7E-08	230	1	1	22.75	1	1
29 UCART1	654218.7	4182383.2	654218.72, 4182383.21	5.08297	0.002186281	4.8E-07	1.7E-08	1.6E-08	230	1	1	22.75	1	1
30 UCART1	654258.7	4182383.2	654258.72, 4182383.21	4.74866	0.002049456	4.5E-07	1.6E-08	1.5E-08	230	1	1	22.75	1	1
31 UCART1	654298.7	4182383.2	654298.72, 4182383.21	4.46147	0.001918962	4.2E-07	1.5E-08	1.4E-08	230	1	1	22.75	1	1
32 UCART1	654338.7	4182383.2	654338.72, 4182383.21	4.17622	0.001796721	4.0E-07	1.4E-08	1.3E-08	230	1	1	22.75	1	1
33 UCART1	654378.7	4182383.2	654378.72, 4182383.21	3.90972	0.001681214	3.7E-07	1.3E-08	1.2E-08	230	1	1	22.75	1	1
34 UCART1	654418.7	4182383.2	654418.72, 4182383.21	3.65898	0.001573796	3.5E-07	1.2E-08	1.1E-08	230	1	1	22.75	1	1
35 UCART1	654458.7	4182383.2	654458.72, 4182383.21	3.42668	0.00147188	3.3E-07	1.2E-08	1.1E-08	230	1	1	22.75	1	1
36 UCART1	654498.7	4182383.2	654498.72, 4182383.21	3.21155	0.001381348	3.1E-07	1.1E-08	1.0E-08	230	1	1	22.75	1	1
37 UCART1	654538.7	4182383.2	654538.72, 4182383.21	3.01349	0.001296159	2.9E-07	1.0E-08	9.3E-09	230	1	1	22.75	1	1
38 UCART1	654578.7	4182383.2	654578.72, 4182383.21	2.83183	0.001218023	2.7E-07	9.6E-09	8.7E-09	230	1	1	22.75	1	1
39 UCART1	654618.7	4182383.2	654618.72, 4182383.21	2.66571	0.001146568	2.5E-07	9.0E-09	8.2E-09	230	1	1	22.75	1	1
40 UCART1	654658.7	4182383.2	654658.72, 4182383.21	2.51384	0.00108125	2.4E-07	8.5E-09	7.8E-09	230	1	1	22.75	1	1
41 UCART1	654698.7	4182383.2	654698.72, 4182383.21	2.375	0.001021532	2.3E-07	8.0E-09	7.3E-09	230	1	1	22.75	1	1
42 UCART1	654738.7	4182383.2	654738.72, 4182383.21	2.24787	0.000966851	2.1E-07	7.6E-09	6.9E-09	230	1	1	22.75	1	1
43 UCART1	654778.7	4182383.2	654778.72, 4182383.21	2.13219	0.000916813	2.0E-07	7.2E-09	6.6E-09	230	1	1	22.75	1	1
44 UCART1	654818.7	4182383.2	654818.72, 4182383.21	2.0234	0.000870302	1.9E-07	6.9E-09	6.2E-09	230	1	1	22.75	1	1
45 UCART1	654858.7	4182383.2	654858.72, 4182383.21	1.92382	0.000827471	1.8E-07	6.5E-09	5.9E-09	230	1	1	22.75	1	1
46 UCART1	654898.7	4182383.2	654898.72, 4182383.21	1.83261	0.000789237	1.7E-07	6.2E-09	5.6E-09	230	1	1	22.75	1	1
47 UCART1	654938.7	4182383.2	654938.72, 4182383.21	1.76799	0.000755473	1.6E-07	6.0E-09	5.4E-09	230	1	1	22.75	1	1
48 UCART1	654978.7	4182383.2	654978.72, 4182383.21	1.71369	0.000726639	1.5E-07	5.8E-09	5.2E-09	230	1	1	22.75	1	1
49 UCART1	655018.7	4182383.2	655018.72, 4182383.21	1.66933	0.000702284	1.4E-07	5.6E-09	5.0E-09	230	1	1	22.75	1	1
50 UCART1	655058.7	4182383.2	655058.72, 4182383.21	1.63411	0.000680721	1.3E-07	5.4E-09	4.8E-09	230	1	1	22.75	1	1
51 UCART1	655098.7	4182383.2	655098.72, 4182383.21	1.60532	0.000661783	1.2E-07	5.2E-09	4.6E-09	230	1	1	22.75	1	1
52 UCART1	655138.7	4182383.2	655138.72, 4182383.21	1.58267	0.000645147	1.1E-07	5.0E-09	4.5E-09	230	1	1	22.75	1	1
53 UCART1	655178.7	4182383.2	655178.72, 4182383.21	1.56544	0.000630619	1.0E-07	4.8E-09	4.4E-09	230	1	1	22.75	1	1
54 UCART1	655218.7	4182383.2	655218.72, 4182383.21	1.55318	0.000617164	9.9E-08	4.7E-09	4.3E-09	230	1	1	22.75	1	1
55 UCART1	655258.7	4182383.2	655258.72, 4182383.21	1.54581	0.000604661	9.8E-08	4.6E-09	4.2E-09	230	1	1	22.75	1	1
56 UCART1	655298.7	4182383.2	655298.72, 4182383.21	1.54223	0.000592988	9.7E-08	4.5E-09	4.1E-09	230	1	1	22.75	1	1
57 UCART1	655338.7	4182383.2	655338.72, 4182383.21	1.54244	0.00058219	9.7E-08	4.4E-09	4.0E-09	230	1	1	22.75	1	1
58 UCART1	655378.7	4182383.2	655378.72, 4182383.21	1.54572	0.000572201	9.7E-08	4.3E-09	3.9E-09	230	1	1	22.75	1	1
59 UCART1	655418.7	4182383.2	655418.72, 4182383.21	1.55207	0.000563081	9.7E-08	4.2E-09	3.8E-09	230	1	1	22.75	1	1
60 UCART1	655458.7	4182383.2	655458.72, 4182383.21	1.56051	0.000554727	9.7E-08	4.1E-09	3.7E-09	230	1	1	22.75	1	1
61 UCART1	655498.7	4182383.2	655498.72, 4182383.21	1.57104	0.000547139	9.7E-08	4.0E-09	3.6E-09	230	1	1	22.75	1	1
62 UCART1	655538.7	4182383.2	655538.72, 4182383.21	1.58367	0.000540351	9.7E-08	3.9E-09	3.5E-09	230	1	1	22.75	1	1
63 UCART1	655578.7	4182383.2	655578.72, 4182383.21	1.5984	0.000534373	9.7E-08	3.8E-09	3.4E-09	230	1	1	22.75	1	1
64 UCART1	655618.7	4182383.2	655618.72, 4182383.21	1.61523	0.000529106	9.7E-08	3.7E-09	3.3E-09	230	1	1	22.75	1	1
65 UCART1	655658.7	4182383.2	655658.72, 4182383.21	1.63416	0.000524551	9.7E-08	3.6E-09	3.2E-09	230	1	1	22.75	1	1
66 UCART1	655698.7	4182383.2	655698.72, 4182383.21	1.65523	0.000520616	9.7E-08	3.5E-09	3.1E-09	230	1	1	22.75	1	1
67 UCART1	655738.7	4182383.2	655738.72, 4182383.21	1.67846	0.000517201	9.7E-08	3.4E-09	3.0E-09	230	1	1	22.75	1	1
68 UCART1	655778.7	4182383.2	655778.72, 418238											

### UCART1	654378.7	4182503.2	654378.72	4182503.21	8.42392	0.003623287	8.0E-07	2.9E-08	2.6E-08
### UCART1	654418.7	4182503.2	654418.72	4182503.21	7.68515	0.003055288	7.3E-07	2.6E-08	2.4E-08
### UCART1	654458.7	4182503.2	654458.72	4182503.21	7.00463	0.003012905	6.0E-07	2.4E-08	2.2E-08
### UCART1	654498.7	4182503.2	654498.72	4182503.21	6.38656	0.00274698	6.1E-07	2.2E-08	2.0E-08
### UCART1	654538.7	4182503.2	654538.72	4182503.21	5.82975	0.002507548	5.5E-07	2.0E-08	1.8E-08
### UCART1	654578.7	4182503.2	654578.72	4182503.21	5.3318	0.002293308	5.1E-07	1.8E-08	1.6E-08
### UCART1	654618.7	4182503.2	654618.72	4182503.21	4.89908	0.002102885	4.6E-07	1.7E-08	1.5E-08
### UCART1	654658.7	4182503.2	654658.72	4182503.21	4.4967	0.001934115	4.3E-07	1.5E-08	1.4E-08
### UCART1	654698.7	4182503.2	654698.72	4182503.21	4.14914	0.001784623	3.9E-07	1.4E-08	1.3E-08
### UCART1	654738.7	4182503.2	654738.72	4182503.21	3.84044	0.001651846	3.6E-07	1.3E-08	1.2E-08
### UCART1	654778.7	4182503.2	654778.72	4182503.21	3.56549	0.001533584	3.4E-07	1.2E-08	1.1E-08
### UCART1	654818.7	4182503.2	654818.72	4182503.21	3.31931	0.001427908	3.1E-07	1.1E-08	1.0E-08
### UCART1	654858.7	4182503.2	654858.72	4182503.21	3.09819	0.001332959	2.9E-07	9.9E-09	9.4E-09
### UCART1	654898.7	4182503.2	654898.72	4182503.21	2.89664	0.00124676	2.7E-07	9.8E-09	8.9E-09
### UCART1	654938.7	4182503.2	654938.72	4182503.21	2.71773	0.001168847	2.6E-07	9.2E-09	8.4E-09
### UCART1	654978.7	4182503.2	654978.72	4182503.21	2.55322	0.001098188	2.4E-07	8.7E-09	7.9E-09
### UCART1	655018.7	4182503.2	655018.72	4182503.21	2.40391	0.001033358	2.3E-07	8.1E-09	7.4E-09
### UCART1	655058.7	4182503.2	655058.72	4182503.21	2.26667	0.000974507	2.1E-07	7.7E-09	7.0E-09
### UCART1	655098.7	4182503.2	655098.72	4182503.21	2.13969	0.000920921	2.0E-07	7.2E-09	6.6E-09
### UCART1	655138.7	4182543.2	655138.72	4182543.21	1.95778	0.000860351	1.9E-07	4.7E-09	4.3E-09
### UCART1	655178.7	4182543.2	655178.72	4182543.21	1.84745	0.0008063978	1.4E-07	5.0E-09	4.6E-09
### UCART1	655218.7	4182543.2	655218.72	4182543.21	1.74875	0.0007540374	1.5E-07	5.4E-09	4.9E-09
### UCART1	655258.7	4182543.2	655258.72	4182543.21	1.65205	0.000702113	1.6E-07	5.8E-09	5.3E-09
### UCART1	655298.7	4182543.2	655298.72	4182543.21	1.56229	0.000650458	1.9E-07	6.7E-09	6.1E-09
### UCART1	655338.7	4182543.2	655338.72	4182543.21	1.47857	0.000601238	2.0E-07	7.2E-09	6.5E-09
### UCART1	655378.7	4182543.2	655378.72	4182543.21	1.39915	0.000554424	2.2E-07	7.8E-09	7.1E-09
### UCART1	655418.7	4182543.2	655418.72	4182543.21	1.32475	0.000510714	2.4E-07	8.4E-09	7.7E-09
### UCART1	655458.7	4182543.2	655458.72	4182543.21	1.25493	0.000470166	2.6E-07	9.2E-09	8.4E-09
### UCART1	655498.7	4182543.2	655498.72	4182543.21	1.18945	0.000431793	2.8E-07	1.0E-08	9.2E-09
### UCART1	655538.7	4182543.2	655538.72	4182543.21	1.12725	0.000395477	3.1E-07	1.1E-08	1.0E-08
### UCART1	655578.7	4182543.2	655578.72	4182543.21	1.06901	0.000361263	3.4E-07	1.2E-08	1.1E-08
### UCART1	655618.7	4182543.2	655618.72	4182543.21	1.01363	0.000328199	3.8E-07	1.3E-08	1.2E-08
### UCART1	655658.7	4182543.2	655658.72	4182543.21	0.96074	0.000296148	4.2E-07	1.5E-08	1.4E-08
### UCART1	655698.7	4182543.2	655698.72	4182543.21	0.91007	0.000265194	4.7E-07	1.7E-08	1.5E-08
### UCART1	655738.7	4182543.2	655738.72	4182543.21	0.86143	0.000235242	5.2E-07	1.9E-08	1.6E-08
### UCART1	655778.7	4182543.2	655778.72	4182543.21	0.81472	0.000206290	5.8E-07	2.1E-08	1.7E-08
### UCART1	655818.7	4182543.2	655818.72	4182543.21	0.77002	0.000178337	6.4E-07	2.3E-08	1.8E-08
### UCART1	655858.7	4182543.2	655858.72	4182543.21	0.72724	0.000151384	7.1E-07	2.5E-08	1.9E-08
### UCART1	655898.7	4182543.2	655898.72	4182543.21	0.68638	0.000125431	7.8E-07	2.8E-08	2.1E-08
### UCART1	655938.7	4182543.2	655938.72	4182543.21	0.64742	0.000100478	8.6E-07	3.1E-08	2.3E-08
### UCART1	655978.7	4182543.2	655978.72	4182543.21	0.61027	0.000076525	9.5E-07	3.4E-08	2.5E-08
### UCART1	656018.7	4182543.2	656018.72	4182543.21	0.57493	0.000053572	1.0E-06	3.8E-08	2.8E-08
### UCART1	656058.7	4182543.2	656058.72	4182543.21	0.54130	0.000031619	1.1E-06	4.2E-08	3.1E-08
### UCART1	656098.7	4182543.2	656098.72	4182543.21	0.50938	0.000019666	1.2E-06	4.7E-08	3.4E-08
### UCART1	656138.7	4182543.2	656138.72	4182543.21	0.47917	0.000012904	1.3E-06	5.2E-08	3.7E-08
### UCART1	656178.7	4182543.2	656178.72	4182543.21	0.45057	0.000008451	1.4E-06	5.8E-08	4.0E-08
### UCART1	656218.7	4182543.2	656218.72	4182543.21	0.42350	0.000005498	1.5E-06	6.4E-08	4.3E-08
### UCART1	656258.7	4182543.2	656258.72	4182543.21	0.39787	0.000003545	1.6E-06	7.1E-08	4.6E-08
### UCART1	656298.7	4182543.2	656298.72	4182543.21	0.37369	0.000002592	1.7E-06	7.8E-08	4.9E-08
### UCART1	656338.7	4182543.2	656338.72	4182543.21	0.35086	0.000001739	1.8E-06	8.6E-08	5.2E-08
### UCART1	656378.7	4182543.2	656378.72	4182543.21	0.32938	0.000010477	1.9E-06	9.5E-08	5.5E-08
### UCART1	656418.7	4182543.2	656418.72	4182543.21	0.30924	0.000007424	2.0E-06	1.0E-07	5.8E-08
### UCART1	656458.7	4182543.2	656458.72	4182543.21	0.29035	0.000005371	2.1E-06	1.1E-07	6.1E-08
### UCART1	656498.7	4182543.2	656498.72	4182543.21	0.27270	0.000003918	2.2E-06	1.2E-07	6.4E-08
### UCART1	656538.7	4182543.2	656538.72	4182543.21	0.25630	0.000002965	2.3E-06	1.3E-07	6.7E-08
### UCART1	656578.7	4182543.2	656578.72	4182543.21	0.24115	0.000002312	2.4E-06	1.4E-07	7.0E-08
### UCART1	656618.7	4182543.2	656618.72	4182543.21	0.22725	0.000001959	2.5E-06	1.5E-07	7.3E-08
### UCART1	656658.7	4182543.2	656658.72	4182543.21	0.21459	0.000001606	2.6E-06	1.6E-07	7.6E-08
### UCART1	656698.7	4182543.2	656698.72	4182543.21	0.20317	0.000001353	2.7E-06	1.7E-07	7.9E-08
### UCART1	656738.7	4182543.2	656738.72	4182543.21	0.19299	0.000001100	2.8E-06	1.8E-07	8.2E-08
### UCART1	656778.7	4182543.2	656778.72	4182543.21	0.18395	0.000000947	2.9E-06	1.9E-07	8.5E-08
### UCART1	656818.7	4182543.2	656818.72	4182543.21	0.17596	0.000000794	3.0E-06	2.0E-07	8.8E-08
### UCART1	656858.7	4182543.2	656858.72	4182543.21	0.16892	0.000000641	3.1E-06	2.1E-07	9.1E-08
### UCART1	656898.7	4182543.2	656898.72	4182543.21	0.16283	0.000000588	3.2E-06	2.2E-07	9.4E-08
### UCART1	656938.7	4182543.2	656938.72	4182543.21	0.15769	0.000000535	3.3E-06	2.3E-07	9.7E-08
### UCART1	656978.7	4182543.2	656978.72	4182543.21	0.15350	0.000000482	3.4E-06	2.4E-07	1.0E-07
### UCART1	657018.7	4182543.2	657018.72	4182543.21	0.14926	0.000000429	3.5E-06	2.5E-07	1.0E-07
### UCART1	657058.7	4182543.2	657058.72	4182543.21	0.14597	0.000000429	3.6E-06	2.6E-07	1.0E-07
### UCART1	657098.7	4182543.2	657098.72	4182543.21	0.14263	0.000000429	3.7E-06	2.7E-07	1.0E-07
### UCART1	657138.7	4182543.2	657138.72	4182543.21	0.13925	0.000000429	3.8E-06	2.8E-07	1.0E-07
### UCART1	657178.7	4182543.2	657178.72	4182543.21	0.13583	0.000000429	3.9E-06	2.9E-07	1.0E-07
### UCART1	657218.7	4182543.2	657218.72	4182543.21	0.13237	0.000000429	4.0E-06	3.0E-07	1.0E-07
### UCART1	657258.7	4182543.2	657258.72	4182543.21	0.12887	0.000000429	4.1E-06	3.1E-07	1.0E-07
### UCART1	657298.7	4182543.2	657298.72	4182543.21	0.12533	0.000000429	4.2E-06	3.2E-07	1.0E-07
### UCART1	657338.7	4182543.2	657338.72	4182543.21	0.12175	0.000000429	4.3E-06	3.3E-07	1.0E-07
### UCART1	657378.7	4182543.2	657378.72	4182543.21	0.11813	0.000000429	4.4E-06	3.4E-07	1.0E-07
### UCART1	657418.7	4182543.2	657418.72	4182543.21	0.11447	0.000000429	4.5E-06	3.5E-07	1.0E-07
### UCART1	657458.7	4182543.2	657458.72	4182543.21	0.11077	0.000000429	4.6E-06	3.6E-07	1.0E-07
### UCART1	657498.7	4182543.2	657498.72	4182543.21	0.10703	0.000000429	4.7E-06	3.7E-07	1.0E-07
### UCART1	657538.7	4182543.2	657538.72	4182543.21	0.10325	0.000000429	4.8E-06	3.8E-07	1.0E-07
### UCART1	657578.7	4182543.2	657578.72	4182543.21	0.09943	0.000000429	4.9E-06	3.9E-07	1.0E-07
### UCART1	657618.7	4182543.2	657618.72	4182543.21	0.09557	0.000000429	5.0E-06	4.0E-07	1.0E-07
### UCART1	657658.7	4182543.2	657658.72	4182543.21	0.09167	0.000000429	5.1E-06	4.1E-07	1.0E-07
### UCART1	657698.7	4182543.2	657698.72	4182543.21	0.08773	0.000000429	5.2E-06	4.2E-07	1.0E-07
### UCART1	657738.7	4182543.2	657738.72	4182543.21	0.08375	0.000000429	5.3E-06	4.3E-07	1.0E-07
### UCART1	657778.7	4182543.2	657778.72	4182543.21	0.07973	0.000000429	5.4E-06	4.4E-07	1.0E-07
### UCART1	657818.7	4182543.2	657818.72	4182543.21	0.07567	0.000000429	5.5E-06	4.5E-07	1.0E-07
### UCART1	657858.7	4182543.2	657858.72	4182543.21	0.07157	0.000000429	5.6E-06	4.6E-07	1.0E-07
### UCART1	657898.7	4182543.2	657898.72	4182543.21	0.06743	0.000000429	5.7E-06	4.7E-07	1.0E-07
### UCART1	657938.7	4182543.2	657938.72	4182543.21	0.06325	0.000000429	5.8E-06	4.8E-07	1.0E-07
### UCART1	657978.7	4182543.2	657978.72	4182543.21	0.05903	0.000000429	5.9E-06	4.9E-07	1.0E-07
### UCART1	658018.7	4182543.2	658018.72	4182543.21	0.05477	0.000000429	6.0E-06	5.0E-07	1.0E-07
### UCART1	658058.								

UCART1	655138.7	4182623.2	655138.72	4182623.21	2.02289	0.000870083	1.9E-07	6.9E-09	6.2E-09
UCART1	655098.7	4182663.2	653098.72	4182663.21	1.67776	0.000721636	1.6E-07	5.7E-09	5.2E-09
UCART1	655138.7	4182663.2	653187.72	4182663.21	1.79000	0.001769934	1.7E-07	1.1E-09	5.6E-09
UCART1	653178.7	4182663.2	653178.72	4182663.21	1.91506	0.000833703	1.8E-07	6.5E-09	5.9E-09
UCART1	653218.7	4182663.2	653218.72	4182663.21	2.05572	0.000884204	2.0E-07	7.0E-09	6.3E-09
UCART1	653258.7	4182663.2	653258.72	4182663.21	2.21535	0.000952864	2.1E-07	7.5E-09	6.8E-09
UCART1	653298.7	4182663.2	653298.72	4182663.21	2.39784	0.000131356	2.3E-07	8.1E-09	7.4E-09
UCART1	653338.7	4182663.2	653338.72	4182663.21	2.6081	0.001217193	2.5E-07	8.8E-09	8.0E-09
UCART1	653378.7	4182663.2	653378.72	4182663.21	2.85222	0.001226794	2.7E-07	9.7E-09	8.9E-09
UCART1	653418.7	4182663.2	653418.72	4182663.21	3.13817	0.001349786	3.0E-07	1.1E-08	9.7E-09
UCART1	653458.7	4182663.2	653458.72	4182663.21	3.47588	0.001495041	3.3E-07	1.2E-08	1.1E-08
UCART1	653498.7	4182663.2	653498.72	4182663.21	3.87622	0.001667235	3.7E-07	1.3E-08	1.2E-08
UCART1	653538.7	4182663.2	653538.72	4182663.21	4.35206	0.001871903	4.1E-07	1.5E-08	1.3E-08
UCART1	653578.7	4182663.2	653578.72	4182663.21	4.92608	0.0021188	4.7E-07	1.7E-08	1.5E-08
UCART1	653618.7	4182663.2	653618.72	4182663.21	5.62658	0.002420098	5.3E-07	1.9E-08	1.7E-08
UCART1	653658.7	4182663.2	653658.72	4182663.21	6.46909	0.002795368	6.2E-07	2.2E-08	2.0E-08
UCART1	653698.7	4182663.2	653698.72	4182663.21	7.60713	0.003271197	7.2E-07	2.6E-08	2.3E-08
UCART1	653738.7	4182663.2	653738.72	4182663.21	9.01418	0.003877168	8.6E-07	3.1E-08	2.8E-08
UCART1	653778.7	4182663.2	653778.72	4182663.21	10.6107	0.004649873	1.0E-06	3.7E-08	3.3E-08
UCART1	653818.7	4182663.2	653818.72	4182663.21	12.3905	0.01464221	3.1E-06	1.1E-07	1.0E-07
UCART1	654018.7	4182663.2	654018.72	4182663.21	38.53697	0.016575476	3.7E-06	1.3E-07	1.2E-07
UCART1	654058.7	4182663.2	654058.72	4182663.21	40.68117	0.017497737	3.9E-06	1.4E-07	1.3E-07
UCART1	654098.7	4182663.2	654098.72	4182663.21	38.20784	0.016433868	3.6E-06	1.3E-07	1.2E-07
UCART1	654138.7	4182663.2	654138.72	4182663.21	33.46342	0.014393247	3.2E-06	1.1E-07	1.0E-07
UCART1	654178.7	4182663.2	654178.72	4182663.21	28.10376	0.012087956	2.7E-06	9.5E-08	8.7E-08
UCART1	654218.7	4182663.2	654218.72	4182663.21	23.26683	0.01007497	2.2E-06	7.9E-08	7.2E-08
UCART1	654258.7	4182663.2	654258.72	4182663.21	19.29498	0.008299134	1.8E-06	6.5E-08	5.9E-08
UCART1	654298.7	4182663.2	654298.72	4182663.21	16.1384	0.00694143	1.5E-06	5.5E-08	5.0E-08
UCART1	654338.7	4182663.2	654338.72	4182663.21	13.64826	0.005870373	1.3E-06	4.6E-08	4.1E-08
UCART1	654378.7	4182663.2	654378.72	4182663.21	11.67504	0.005021654	1.1E-06	4.0E-08	3.6E-08
UCART1	654418.7	4182663.2	654418.72	4182663.21	10.09424	0.004341723	9.6E-07	3.4E-08	3.1E-08
UCART1	654458.7	4182663.2	654458.72	4182663.21	8.8182	0.00379013	8.4E-07	3.0E-08	2.7E-08
UCART1	654498.7	4182663.2	654498.72	4182663.21	7.75822	0.003336946	7.4E-07	2.6E-08	2.4E-08
UCART1	654538.7	4182663.2	654538.72	4182663.21	6.8824	0.00296025	6.5E-07	2.3E-08	2.1E-08
UCART1	654578.7	4182663.2	654578.72	4182663.21	6.147	0.00264394	5.8E-07	2.1E-08	1.9E-08
UCART1	654618.7	4182663.2	654618.72	4182663.21	5.5401	0.002375891	5.2E-07	1.9E-08	1.7E-08
UCART1	654658.7	4182663.2	654658.72	4182663.21	4.99173	0.002147037	4.7E-07	1.7E-08	1.5E-08
UCART1	654698.7	4182663.2	654698.72	4182663.21	4.53358	0.001949978	4.3E-07	1.5E-08	1.4E-08
UCART1	654738.7	4182663.2	654738.72	4182663.21	4.16368	0.001779126	3.9E-07	1.4E-08	1.3E-08
UCART1	654778.7	4182663.2	654778.72	4182663.21	3.7903	0.001632729	3.6E-07	1.3E-08	1.2E-08
UCART1	654818.7	4182663.2	654818.72	4182663.21	3.48662	0.001499661	3.3E-07	1.2E-08	1.1E-08
UCART1	654858.7	4182663.2	654858.72	4182663.21	3.23893	0.001384522	3.1E-07	1.1E-08	9.9E-09
UCART1	654898.7	4182663.2	654898.72	4182663.21	2.98188	0.001292483	2.8E-07	9.8E-09	9.1E-09
UCART1	654938.7	4182663.2	654938.72	4182663.21	2.77064	0.001191704	2.6E-07	9.4E-09	8.5E-09
UCART1	654978.7	4182663.2	654978.72	4182663.21	2.58203	0.00111058	2.4E-07	8.7E-09	8.0E-09
UCART1	655018.7	4182663.2	655018.72	4182663.21	2.41264	0.001037723	2.2E-07	7.4E-09	7.4E-09
UCART1	655058.7	4182663.2	655058.72	4182663.21	2.2601	0.000972112	2.1E-07	7.7E-09	7.0E-09
UCART1	655098.7	4182663.2	655098.72	4182663.21	2.122	0.000912712	2.0E-07	7.2E-09	6.5E-09
UCART1	655138.7	4182703.2	655138.72	4182703.21	1.95653	0.00085887	1.9E-07	6.6E-09	6.1E-09
UCART1	655098.7	4182703.2	655098.72	4182703.21	1.80127	0.00077476	1.7E-07	6.1E-09	5.6E-09
UCART1	653138.7	4182703.2	653138.72	4182703.21	1.92856	0.00082951	1.8E-07	6.5E-09	5.9E-09
UCART1	653178.7	4182703.2	653178.72	4182703.21	2.07088	0.000890724	2.0E-07	7.0E-09	6.4E-09
UCART1	653218.7	4182703.2	653218.72	4182703.21	2.21168	0.000959289	2.1E-07	7.4E-09	6.8E-09
UCART1	653258.7	4182703.2	653258.72	4182703.21	2.41351	0.001038096	2.3E-07	8.2E-09	7.4E-09
UCART1	653298.7	4182703.2	653298.72	4182703.21	2.62123	0.00112744	2.5E-07	8.9E-09	8.1E-09
UCART1	653338.7	4182703.2	653338.72	4182703.21	2.89515	0.001229774	2.7E-07	9.7E-09	8.9E-09
UCART1	653378.7	4182703.2	653378.72	4182703.21	3.13433	0.001345134	3.0E-07	1.1E-08	9.7E-09
UCART1	653418.7	4182703.2	653418.72	4182703.21	3.45489	0.001486013	3.3E-07	1.2E-08	1.1E-08
UCART1	653458.7	4182703.2	653458.72	4182703.21	3.8333	0.001648888	3.6E-07	1.3E-08	1.2E-08
UCART1	653498.7	4182703.2	653498.72	4182703.21	4.28647	0.001843091	4.1E-07	1.4E-08	1.3E-08
UCART1	653538.7	4182703.2	653538.72	4182703.21	4.83601	0.002080509	4.6E-07	1.6E-08	1.5E-08
UCART1	653578.7	4182703.2	653578.72	4182703.21	5.55223	0.002372204	5.2E-07	1.9E-08	1.7E-08
UCART1	653618.7	4182703.2	653618.72	4182703.21	6.38872	0.002739366	6.0E-07	2.2E-08	2.0E-08
UCART1	653658.7	4182703.2	653658.72	4182703.21	7.45301	0.00320568	7.1E-07	2.5E-08	2.3E-08
UCART1	653698.7	4182703.2	653698.72	4182703.21	8.85474	0.00388059	8.4E-07	3.0E-08	2.7E-08
UCART1	653738.7	4182703.2	653738.72	4182703.21	10.7258	0.00461958	1.0E-06	3.4E-08	3.1E-08
UCART1	653778.7	4182703.2	653778.72	4182703.21	13.27847	0.00571132	1.3E-06	4.5E-08	4.1E-08
UCART1	653818.7	4182703.2	653818.72	4182703.21	15.39678	0.023827188	5.3E-06	1.9E-07	1.7E-07
UCART1	654018.7	4182703.2	654018.72	4182703.21	68.83995	0.022740088	6.3E-06	2.3E-07	2.1E-07
UCART1	654058.7	4182703.2	654058.72	4182703.21	69.37883	0.02303093	6.4E-06	2.3E-07	2.1E-07
UCART1	654098.7	4182703.2	654098.72	4182703.21	65.01068	0.023661129	5.2E-06	1.9E-07	1.7E-07
UCART1	654138.7	4182703.2	654138.72	4182703.21	42.7809	0.018614721	4.1E-06	1.5E-07	1.3E-07
UCART1	654178.7	4182703.2	654178.72	4182703.21	33.61878	0.01446607	3.2E-06	1.1E-07	1.0E-07
UCART1	654218.7	4182703.2	654218.72	4182703.21	26.42615	0.011366484	2.5E-06	9.0E-08	8.1E-08
UCART1	654258.7	4182703.2	654258.72	4182703.21	21.7025	0.009105723	2.0E-06	7.2E-08	6.5E-08
UCART1	654298.7	4182703.2	654298.72	4182703.21	17.20328	0.007437761	1.6E-06	6.0E-08	5.3E-08
UCART1	654338.7	4182703.2	654338.72	4182703.21	14.37489	0.006182911	1.4E-06	4.9E-08	4.4E-08
UCART1	654378.7	4182703.2	654378.72	4182703.21	12.13411	0.005219109	1.2E-06	4.1E-08	3.7E-08
UCART1	654418.7	4182703.2	654418.72	4182703.21	10.37002	0.004464112	9.8E-07	3.5E-08	3.2E-08
UCART1	654458.7	4182703.2	654458.72	4182703.21	8.98941	0.003862483	8.4E-07	3.1E-08	2.8E-08
UCART1	654498.7	4182703.2	654498.72	4182703.21	7.84861	0.003375835	7.4E-07	2.7E-08	2.4E-08
UCART1	654538.7	4182703.2	654538.72	4182703.21	6.92059	0.00297676	6.6E-07	2.3E-08	2.1E-08
UCART1	654578.7	4182703.2	654578.72	4182703.21	6.15662	0.002645497	5.8E-07	2.1E-08	1.9E-08
UCART1	654618.7	4182703.2	654618.72	4182703.21	5.50478	0.002367709	5.2E-07	1.9E-08	1.7E-08
UCART1	654658.7	4182703.2	654658.72	4182703.21	4.95799	0.002132525	4.7E-07	1.7E-08	1.6E-08
UCART1	654698.7	4182703.2	654698.72	4182703.21	4.50123	0.00193178	4.3E-07	1.5E-08	1.4E-08
UCART1	654738.7	4182703.2	654738.72	4182703.21	4.08932	0.001758893	3.9E-07	1.4E-08	1.3E-08
UCART1	654778.7	4182703.2	654778.72	4182703.21	3.74098	0.00160906	3.5E-07	1.3E-08	1.2E-08
UCART1	654818.7	4182703.2	654818.72	4182703.21	3.40765	0.00147811	3.3E-07	1.2E-08	1.1E-08
UCART1	654858.7	4182703.2	654858.72	4182703.21	3.16993	0.001363447	3.0E-07	1.1E-08	1.0E-08
UCART1	654898.7	4182703.2	654898.72	4182703.21	2.93403	0.001261982	2.8E-07	9.9E-09	9.0E-09
UCART1	654938.7	4182703.2	654938.72	4182703.21	2.72481	0.001171992	2.6E-07	9.2E-09	8.4E-09
UCART1	654978.7	4182703.2	654978.72	4182703.21	2.53814	0.001091702	2.4E-07	8.4E-09	7.7

UCART1	65385.8	4182783.2	653858.72	4182783.21	44.889	0.019307604	4.3E-06	1.5E-07	1.4E-07
UCART1	65409.87	4182783.2	654098.72	4182783.21	89.4479	0.038473225	8.5E-06	3.0E-07	2.8E-07
UCART1	65413.87	4182783.2	654138.72	4182783.21	84.55137	0.024322809	4.9E-06	1.8E-07	1.7E-07
UCART1	65417.87	4182783.2	654178.72	4182783.21	88.96618	0.016772991	3.7E-06	1.3E-07	1.2E-07
UCART1	65421.87	4182783.2	654218.72	4182783.21	28.59086	0.021297467	2.7E-06	9.7E-08	8.8E-08
UCART1	65425.87	4182783.2	654258.72	4182783.21	21.33308	0.005429529	2.1E-06	2.1E-08	2.1E-08
UCART1	65429.87	4182783.2	654298.72	4182783.21	17.39379	0.007481396	1.7E-06	5.9E-08	5.4E-08
UCART1	65433.87	4182783.2	654338.72	4182783.21	14.17305	0.006090906	1.3E-06	4.8E-08	4.4E-08
UCART1	65437.87	4182783.2	654378.72	4182783.21	11.79384	0.005074714	1.1E-06	4.0E-08	3.6E-08
UCART1	65441.87	4182783.2	654418.72	4182783.21	9.99497	0.004299025	9.5E-07	3.4E-08	3.1E-08
UCART1	65445.87	4182783.2	654458.72	4182783.21	8.59125	0.003695258	8.1E-07	2.9E-08	2.6E-08
UCART1	65449.87	4182783.2	654498.72	4182783.21	7.47556	0.003125139	7.1E-07	2.5E-08	2.3E-08
UCART1	65453.87	4182783.2	654538.72	4182783.21	6.57939	0.002628721	6.2E-07	2.2E-08	2.0E-08
UCART1	65457.87	4182783.2	654578.72	4182783.21	5.83178	0.002508358	5.5E-07	2.0E-08	1.8E-08
UCART1	65461.87	4182783.2	654618.72	4182783.21	5.2152	0.002243156	4.9E-07	1.8E-08	1.6E-08
UCART1	65465.87	4182783.2	654658.72	4182783.21	4.68623	0.002003937	4.5E-07	1.6E-08	1.4E-08
UCART1	65469.87	4182783.2	654698.72	4182783.21	4.25481	0.001830074	4.0E-07	1.4E-08	1.3E-08
UCART1	65473.87	4182783.2	654738.72	4182783.21	3.87612	0.001667152	3.7E-07	1.3E-08	1.2E-08
UCART1	65477.87	4182783.2	654778.72	4182783.21	3.5483	0.001519151	3.4E-07	1.2E-08	1.1E-08
UCART1	65481.87	4182783.2	654818.72	4182783.21	3.26279	0.001403387	3.1E-07	1.1E-08	1.0E-08
UCART1	65485.87	4182783.2	654858.72	4182783.21	3.01241	0.001295694	2.9E-07	1.0E-08	9.3E-09
UCART1	65489.87	4182783.2	654898.72	4182783.21	2.79129	0.001200586	2.6E-07	9.5E-09	8.6E-09
UCART1	65493.87	4182783.2	654938.72	4182783.21	2.59497	0.001116145	2.5E-07	8.8E-09	8.0E-09
UCART1	65497.87	4182783.2	654978.72	4182783.21	2.4199	0.001040845	2.3E-07	8.2E-09	7.5E-09
UCART1	65501.87	4182783.2	655018.72	4182783.21	2.26292	0.000973124	2.1E-07	7.7E-09	7.0E-09
UCART1	65505.87	4182783.2	655058.72	4182783.21	2.1215	0.000914997	2.0E-07	7.2E-09	6.5E-09
UCART1	65509.87	4182783.2	655098.72	4182783.21	1.99384	0.000857588	1.9E-07	6.8E-09	6.1E-09
UCART1	65513.87	4182783.2	655138.72	4182783.21	1.87799	0.000800779	1.8E-07	6.4E-09	5.8E-09
UCART1	65517.87	4182783.2	655178.72	4182783.21	1.76851	0.000744064	1.7E-07	6.0E-09	5.4E-09
UCART1	65521.87	4182783.2	655218.72	4182783.21	1.66483	0.000687357	1.6E-07	5.6E-09	5.0E-09
UCART1	65525.87	4182783.2	655258.72	4182783.21	1.56286	0.00063065	1.5E-07	5.2E-09	4.6E-09
UCART1	65529.87	4182783.2	655298.72	4182783.21	1.46161	0.000573947	1.4E-07	4.8E-09	4.2E-09
UCART1	65533.87	4182783.2	655338.72	4182783.21	1.36113	0.000517238	1.3E-07	4.4E-09	3.8E-09
UCART1	65537.87	4182783.2	655378.72	4182783.21	1.26132	0.000460529	1.2E-07	4.0E-09	3.4E-09
UCART1	65541.87	4182783.2	655418.72	4182783.21	1.16218	0.00040382	1.1E-07	3.6E-09	3.0E-09
UCART1	65545.87	4182783.2	655458.72	4182783.21	1.06369	0.000347119	1.0E-07	3.2E-09	2.6E-09
UCART1	65549.87	4182783.2	655498.72	4182783.21	0.96583	0.000290416	9.6E-08	2.8E-09	2.2E-09
UCART1	65553.87	4182783.2	655538.72	4182783.21	0.86858	0.000233713	9.0E-08	2.4E-09	1.8E-09
UCART1	65557.87	4182783.2	655578.72	4182783.21	0.77183	0.00017701	8.2E-08	2.0E-09	1.4E-09
UCART1	65561.87	4182783.2	655618.72	4182783.21	0.67558	0.000120307	7.4E-08	1.6E-09	1.0E-09
UCART1	65565.87	4182783.2	655658.72	4182783.21	0.57983	0.000063604	6.6E-08	1.2E-09	6E-10
UCART1	65569.87	4182783.2	655698.72	4182783.21	0.48458	0.000006901	5.8E-08	8E-10	3E-10
UCART1	65573.87	4182783.2	655738.72	4182783.21	0.38983	0.000001198	5.0E-08	4E-10	1E-10
UCART1	65577.87	4182783.2	655778.72	4182783.21	0.29508	0.000000495	4.2E-08	2E-10	5E-11
UCART1	65581.87	4182783.2	655818.72	4182783.21	0.20033	0.000000192	3.4E-08	1E-10	2E-11
UCART1	65585.87	4182783.2	655858.72	4182783.21	0.10558	0.000000089	2.6E-08	5E-11	1E-11
UCART1	65589.87	4182783.2	655898.72	4182783.21	0.01083	0.000000036	1.8E-08	2E-11	4E-12
UCART1	65593.87	4182783.2	655938.72	4182783.21	0.00008	0.000000014	1.0E-08	1E-11	2E-12
UCART1	65597.87	4182783.2	655978.72	4182783.21	0.00003	0.000000006	6E-09	5E-12	1E-12
UCART1	65601.87	4182783.2	656018.72	4182783.21	0.00001	0.000000002	4E-09	3E-12	6E-13
UCART1	65605.87	4182783.2	656058.72	4182783.21	0.00000	0.000000001	2E-09	1E-12	3E-13
UCART1	65609.87	4182783.2	656098.72	4182783.21	0.00000	0.000000000	1E-09	5E-13	1E-13
UCART1	65613.87	4182783.2	656138.72	4182783.21	0.00000	0.000000000	5E-10	2E-13	5E-14
UCART1	65617.87	4182783.2	656178.72	4182783.21	0.00000	0.000000000	3E-10	1E-13	3E-14
UCART1	65621.87	4182783.2	656218.72	4182783.21	0.00000	0.000000000	2E-10	5E-14	2E-14
UCART1	65625.87	4182783.2	656258.72	4182783.21	0.00000	0.000000000	1E-10	2E-14	1E-14
UCART1	65629.87	4182783.2	656298.72	4182783.21	0.00000	0.000000000	5E-11	1E-14	5E-15
UCART1	65633.87	4182783.2	656338.72	4182783.21	0.00000	0.000000000	3E-11	5E-15	3E-15
UCART1	65637.87	4182783.2	656378.72	4182783.21	0.00000	0.000000000	2E-11	2E-15	2E-15
UCART1	65641.87	4182783.2	656418.72	4182783.21	0.00000	0.000000000	1E-11	1E-15	1E-15
UCART1	65645.87	4182783.2	656458.72	4182783.21	0.00000	0.000000000	5E-12	5E-16	5E-16
UCART1	65649.87	4182783.2	656498.72	4182783.21	0.00000	0.000000000	3E-12	2E-16	2E-16
UCART1	65653.87	4182783.2	656538.72	4182783.21	0.00000	0.000000000	2E-12	1E-16	1E-16
UCART1	65657.87	4182783.2	656578.72	4182783.21	0.00000	0.000000000	1E-12	5E-17	5E-17
UCART1	65661.87	4182783.2	656618.72	4182783.21	0.00000	0.000000000	5E-13	2E-17	2E-17
UCART1	65665.87	4182783.2	656658.72	4182783.21	0.00000	0.000000000	3E-13	1E-17	1E-17
UCART1	65669.87	4182783.2	656698.72	4182783.21	0.00000	0.000000000	2E-13	5E-18	5E-18
UCART1	65673.87	4182783.2	656738.72	4182783.21	0.00000	0.000000000	1E-13	2E-18	2E-18
UCART1	65677.87	4182783.2	656778.72	4182783.21	0.00000	0.000000000	5E-14	1E-18	1E-18
UCART1	65681.87	4182783.2	656818.72	4182783.21	0.00000	0.000000000	3E-14	5E-19	5E-19
UCART1	65685.87	4182783.2	656858.72	4182783.21	0.00000	0.000000000	2E-14	2E-19	2E-19
UCART1	65689.87	4182783.2	656898.72	4182783.21	0.00000	0.000000000	1E-14	1E-19	1E-19
UCART1	65693.87	4182783.2	656938.72	4182783.21	0.00000	0.000000000	5E-15	5E-20	5E-20
UCART1	65697.87	4182783.2	656978.72	4182783.21	0.00000	0.000000000	3E-15	2E-20	2E-20
UCART1	65701.87	4182783.2	657018.72	4182783.21	0.00000	0.000000000	2E-15	1E-20	1E-20
UCART1	65705.87	4182783.2	657058.72	4182783.21	0.00000	0.000000000	1E-15	5E-21	5E-21
UCART1	65709.87	4182783.2	657098.72	4182783.21	0.00000	0.000000000	5E-16	2E-21	2E-21
UCART1	65713.87	4182783.2	657138.72	4182783.21	0.00000	0.000000000	3E-16	1E-21	1E-21
UCART1	65717.87	4182783.2	657178.72	4182783.21	0.00000	0.000000000	2E-16	5E-22	5E-22
UCART1	65721.87	4182783.2	657218.72	4182783.21	0.00000	0.000000000	1E-16	2E-22	2E-22
UCART1	65725.87	4182783.2	657258.72	4182783.21	0.00000	0.000000000	5E-17	1E-22	1E-22
UCART1	65729.87	4182783.2	657298.72	4182783.21	0.00000	0.000000000	3E-17	5E-23	5E-23
UCART1	65733.87	4182783.2	657338.72	4182783.21	0.00000	0.000000000	2E-17	2E-23	2E-23
UCART1	65737.87	4182783.2	657378.72	4182783.21	0.00000	0.000000000	1E-17	1E-23	1E-23
UCART1	65741.87	4182783.2	657418.72	4182783.21	0.00000	0.000000000	5E-18	5E-24	5E-24
UCART1	65745.87	4182783.2	657458.72	4182783.21	0.00000	0.000000000	3E-18	2E-24	2E-24
UCART1	65749.87	4182783.2	657498.72	4182783.21	0.00000	0.000000000	2E-18	1E-24	1E-24
UCART1	65753.87	4182783.2	657538.72	4182783.21	0.00000	0.000000000	1E-18	5E-25	5E-25
UCART1	65757.87	4182783.2	657578.72	4182783.21	0.00000	0.000000000	5E-19	2E-25	2E-25
UCART1	65761.87	4182783.2	657618.72	4182783.21	0.00000	0.000000000	3E-19	1E-25	1E-25
UCART1	65765.87	4182783.2	657658.72	4182783.21	0.00000	0.000000000	2E-19	5E-26	5E-26
UCART1	65769.87	4182783.2	657698.72	4182783.21	0.00000	0.000000000	1E-19	2E-26	2E-26
UCART1	65773.87	4182783.2	657738.72	4182783.21	0.00000	0.000000000	5E-20	1E-26	1E-26
UCART1	65777.87	4182783.2	657778.72	4182783.21	0.00000	0.000000000	3E-20	5E-27	5E-27
UCART1	65781.87	4182783.2	657818.72	4182783.21	0.00000	0.000000000	2E-20	2E-27	2E-27
UCART1	65785.87								

UCART1	653138.7	4182943.2	653138.72	4182943.21	2.2222	0.00095581	2.1E-07	7.5E-09	6.9E-09
UCART1	653178.7	4182943.2	653178.72	4182943.21	2.4007	0.00103626	2.3E-07	8.2E-09	7.4E-09
UCART1	653218.7	4182943.2	653218.72	4182943.21	2.62571	0.00112987	2.5E-07	9.1E-09	8.1E-09
UCART1	653258.7	4182943.2	653258.72	4182943.21	2.8739	0.00123618	2.7E-07	9.7E-09	8.8E-09
UCART1	653298.7	4182943.2	653298.72	4182943.21	3.16196	0.00136009	3.0E-07	1.1E-08	9.7E-09
UCART1	653338.7	4182943.2	653338.72	4182943.21	3.49923	0.00150285	3.3E-07	1.1E-08	1.1E-08
UCART1	653378.7	4182943.2	653378.72	4182943.21	3.89734	0.00167319	3.7E-07	1.3E-08	1.2E-08
UCART1	653418.7	4182943.2	653418.72	4182943.21	4.37277	0.00188011	4.1E-07	1.5E-08	1.3E-08
UCART1	653458.7	4182943.2	653458.72	4182943.21	4.94688	0.00212778	4.7E-07	1.7E-08	1.4E-08
UCART1	653498.7	4182943.2	653498.72	4182943.21	5.64876	0.00242963	5.4E-07	1.9E-08	1.7E-08
UCART1	653538.7	4182943.2	653538.72	4182943.21	6.51771	0.00280339	6.2E-07	2.2E-08	2.0E-08
UCART1	653578.7	4182943.2	653578.72	4182943.21	7.61017	0.00327277	7.2E-07	2.6E-08	2.3E-08
UCART1	653618.7	4182943.2	653618.72	4182943.21	9.00541	0.00387396	8.5E-07	3.1E-08	2.8E-08
UCART1	653658.7	4182943.2	653658.72	4182943.21	10.82106	0.00464342	1.0E-06	3.7E-08	3.3E-08
UCART1	653698.7	4182943.2	653698.72	4182943.21	13.21217	0.00560975	1.3E-06	4.5E-08	4.1E-08
UCART1	653738.7	4182943.2	653738.72	4182943.21	16.2558	0.00710376	1.6E-06	5.6E-08	5.1E-08
UCART1	653778.7	4182943.2	653778.72	4182943.21	21.07782	0.00905907	2.0E-06	7.1E-08	6.5E-08
UCART1	653818.7	4182943.2	653818.72	4182943.21	27.2177	0.01170845	2.6E-06	9.2E-08	8.4E-08
UCART1	653858.7	4182943.2	653858.72	4182943.21	34.5177	0.01468929	3.2E-06	1.2E-07	1.1E-07
UCART1	654258.7	4182943.2	654258.72	4182943.21	10.7078	0.004606478	1.0E-06	3.6E-08	3.3E-08
UCART1	654298.7	4182943.2	654298.72	4182943.21	9.58348	0.00412035	9.1E-07	3.2E-08	3.0E-08
UCART1	654338.7	4182943.2	654338.72	4182943.21	8.55024	0.003670719	8.1E-07	2.9E-08	2.6E-08
UCART1	654378.7	4182943.2	654378.72	4182943.21	7.61111	0.003282384	7.2E-07	2.6E-08	2.4E-08
UCART1	654418.7	4182943.2	654418.72	4182943.21	6.82656	0.002936232	6.5E-07	2.3E-08	2.1E-08
UCART1	654458.7	4182943.2	654458.72	4182943.21	6.12766	0.002635622	5.8E-07	2.1E-08	1.9E-08
UCART1	654498.7	4182943.2	654498.72	4182943.21	5.52323	0.002375358	5.2E-07	1.9E-08	1.7E-08
UCART1	654538.7	4182943.2	654538.72	4182943.21	4.99766	0.002149588	4.7E-07	1.7E-08	1.5E-08
UCART1	654578.7	4182943.2	654578.72	4182943.21	4.54211	0.001953647	4.3E-07	1.5E-08	1.4E-08
UCART1	654618.7	4182943.2	654618.72	4182943.21	4.14522	0.001792937	3.9E-07	1.4E-08	1.3E-08
UCART1	654658.7	4182943.2	654658.72	4182943.21	3.79793	0.001633561	3.6E-07	1.3E-08	1.2E-08
UCART1	654698.7	4182943.2	654698.72	4182943.21	3.49306	0.001502431	3.3E-07	1.2E-08	1.1E-08
UCART1	654738.7	4182943.2	654738.72	4182943.21	3.2281	0.001386621	3.1E-07	1.1E-08	9.9E-09
UCART1	654778.7	4182943.2	654778.72	4182943.21	2.98228	0.001284025	2.8E-07	1.0E-08	9.1E-09
UCART1	654818.7	4182943.2	654818.72	4182943.21	2.77307	0.00119275	2.6E-07	9.4E-09	8.5E-09
UCART1	654858.7	4182943.2	654858.72	4182943.21	2.58337	0.001111156	2.5E-07	8.8E-09	8.0E-09
UCART1	654898.7	4182943.2	654898.72	4182943.21	2.41235	0.001037894	2.3E-07	8.2E-09	7.4E-09
UCART1	654938.7	4182943.2	654938.72	4182943.21	2.26006	0.000972094	2.1E-07	7.7E-09	7.0E-09
UCART1	654978.7	4182943.2	654978.72	4182943.21	2.12447	0.000912484	2.0E-07	7.2E-09	6.5E-09
UCART1	655018.7	4182943.2	655018.72	4182943.21	1.99528	0.000858466	1.9E-07	6.8E-09	6.1E-09
UCART1	655058.7	4182943.2	655058.72	4182943.21	1.88163	0.000809324	1.8E-07	6.4E-09	5.8E-09
UCART1	655098.7	4182943.2	655098.72	4182943.21	1.77728	0.000764442	1.7E-07	6.0E-09	5.5E-09
UCART1	655138.7	4182943.2	655138.72	4182943.21	1.68227	0.00072376	1.6E-07	5.7E-09	5.2E-09
UCART1	655178.7	4182943.2	655178.72	4182943.21	1.59892	0.000687678	1.5E-07	5.4E-09	4.9E-09
UCART1	653138.7	4182983.2	653138.72	4182983.21	2.20244	0.00047311	2.1E-07	7.5E-09	6.8E-09
UCART1	653178.7	4182983.2	653178.72	4182983.21	2.38811	0.001027171	2.3E-07	8.1E-09	7.4E-09
UCART1	653218.7	4182983.2	653218.72	4182983.21	2.60045	0.001186523	2.5E-07	8.7E-09	7.9E-09
UCART1	653258.7	4182983.2	653258.72	4182983.21	2.84406	0.001323284	2.7E-07	9.6E-09	8.8E-09
UCART1	653298.7	4182983.2	653298.72	4182983.21	3.12565	0.00144401	3.0E-07	1.1E-08	9.6E-09
UCART1	653338.7	4182983.2	653338.72	4182983.21	3.45339	0.001603308	3.3E-07	1.1E-08	1.1E-08
UCART1	653378.7	4182983.2	653378.72	4182983.21	3.83776	0.001785093	3.6E-07	1.3E-08	1.2E-08
UCART1	653418.7	4182983.2	653418.72	4182983.21	4.29192	0.002048636	4.1E-07	1.5E-08	1.3E-08
UCART1	653458.7	4182983.2	653458.72	4182983.21	4.83295	0.002387743	4.6E-07	1.6E-08	1.5E-08
UCART1	653498.7	4182983.2	653498.72	4182983.21	5.46252	0.002813835	5.2E-07	1.8E-08	1.6E-08
UCART1	653538.7	4182983.2	653538.72	4182983.21	6.20886	0.003369785	5.9E-07	2.1E-08	1.9E-08
UCART1	653578.7	4182983.2	653578.72	4182983.21	7.23388	0.004114471	6.9E-07	2.5E-08	2.2E-08
UCART1	653618.7	4182983.2	653618.72	4182983.21	8.41512	0.005026555	8.0E-07	2.8E-08	2.6E-08
UCART1	653658.7	4182983.2	653658.72	4182983.21	9.95116	0.006280181	9.4E-07	3.4E-08	3.1E-08
UCART1	653698.7	4182983.2	653698.72	4182983.21	11.90877	0.007812186	1.1E-06	4.0E-08	3.7E-08
UCART1	653738.7	4182983.2	653738.72	4182983.21	14.40331	0.009619335	1.4E-06	4.9E-08	4.4E-08
UCART1	653778.7	4182983.2	653778.72	4182983.21	17.41327	0.01248975	1.7E-06	5.8E-08	5.2E-08
UCART1	653818.7	4182983.2	653818.72	4182983.21	20.57209	0.016848443	2.0E-06	7.0E-08	6.3E-08
UCART1	653858.7	4182983.2	653858.72	4182983.21	22.2954	0.001989871	2.1E-06	7.6E-08	6.9E-08
UCART1	654298.7	4182983.2	654298.72	4182983.21	7.12829	0.00289528	6.8E-07	2.4E-08	2.2E-08
UCART1	654338.7	4182983.2	654338.72	4182983.21	6.68473	0.00257228	6.3E-07	2.3E-08	2.1E-08
UCART1	654378.7	4182983.2	654378.72	4182983.21	6.18209	0.002365033	5.9E-07	2.1E-08	1.9E-08
UCART1	654418.7	4182983.2	654418.72	4182983.21	5.69533	0.002148975	5.4E-07	1.9E-08	1.8E-08
UCART1	654458.7	4182983.2	654458.72	4182983.21	5.23792	0.002025298	5.0E-07	1.8E-08	1.6E-08
UCART1	654498.7	4182983.2	654498.72	4182983.21	4.8158	0.002071366	4.6E-07	1.6E-08	1.5E-08
UCART1	654538.7	4182983.2	654538.72	4182983.21	4.42064	0.001905702	4.2E-07	1.5E-08	1.4E-08
UCART1	654578.7	4182983.2	654578.72	4182983.21	4.06264	0.001757167	3.9E-07	1.4E-08	1.3E-08
UCART1	654618.7	4182983.2	654618.72	4182983.21	3.76792	0.001626653	3.6E-07	1.3E-08	1.2E-08
UCART1	654658.7	4182983.2	654658.72	4182983.21	3.48518	0.001499042	3.3E-07	1.2E-08	1.1E-08
UCART1	654698.7	4182983.2	654698.72	4182983.21	3.23101	0.001389718	3.1E-07	1.1E-08	1.0E-08
UCART1	654738.7	4182983.2	654738.72	4182983.21	3.00232	0.001291354	2.8E-07	1.0E-08	9.3E-09
UCART1	654778.7	4182983.2	654778.72	4182983.21	2.79651	0.001202832	2.7E-07	9.5E-09	8.8E-09
UCART1	654818.7	4182983.2	654818.72	4182983.21	2.61053	0.001122855	2.5E-07	9.0E-09	8.2E-09
UCART1	654858.7	4182983.2	654858.72	4182983.21	2.44264	0.001056025	2.3E-07	8.3E-09	7.5E-09
UCART1	654898.7	4182983.2	654898.72	4182983.21	2.29042	0.000985153	2.2E-07	7.8E-09	7.1E-09
UCART1	654938.7	4182983.2	654938.72	4182983.21	2.15213	0.000925672	2.0E-07	7.3E-09	6.6E-09
UCART1	654978.7	4182983.2	654978.72	4182983.21	2.02848	0.000871498	1.9E-07	6.8E-09	6.1E-09
UCART1	655018.7	4182983.2	655018.72	4182983.21	1.91132	0.000822095	1.8E-07	6.5E-09	5.9E-09
UCART1	655058.7	4182983.2	655058.72	4182983.21	1.80625	0.000779902	1.7E-07	6.1E-09	5.6E-09
UCART1	655098.7	4182983.2	655098.72	4182983.21	1.71292	0.000745335	1.6E-07	5.8E-09	5.2E-09
UCART1	655098.7	4183023.2	655098.72	4183023.21	2.02181	0.000866919	1.9E-07	6.8E-09	6.2E-09
UCART1	653138.7	4183023.2	653138.72	4183023.21	2.18211	0.000938667	2.1E-07	7.4E-09	6.7E-09
UCART1	653178.7	4183023.2	653178.72	4183023.21	2.36043	0.001016114	2.3E-07	8.0E-09	7.3E-09
UCART1	653218.7	4183023.2	653218.72	4183023.21	2.57009	0.001105444	2.4E-07	8.7E-09	7.9E-09
UCART1	653258.7	4183023.2	653258.72	4183023.21	2.80509	0.001266522	2.7E-07	9.5E-09	8.6E-09
UCART1	653298.7	4183023.2	653298.72	4183023.21	3.07419	0.001422267	2.9E-07	1.0E-08	9.3E-09
UCART1	653338.7	4183023.2	653338.72	4183023.21	3.38379	0.001604547	3.2E-07	1.1E-08	9.8E-09
UCART1	653378.7	4183023.2	653378.72	4183023.21	3.74183	0.001809432	3.5E-07	1.3E-08	1.2E-08
UCART1	653418.7	4183023.2	653418.72	4183023.21	4.15811	0.002078841	3.9E-07	1.4E-08	1.3E-08
UCART1	653458.7	4183023.2	653458.72	4183023.21	4.64544	0.002397962	4.4E-07	1.6E-08	1.4E-08

UCART1	653258.7	4183263.2	653258.72	4183263.21	2.26412	0.000973841	2.1E-07	7.7E-09	7.0E-09
UCART1	653298.7	4183263.2	653298.72	4183263.21	2.43007	0.001054475	2.3E-07	8.2E-09	7.5E-09
UCART1	653338.7	4183263.2	653338.72	4183263.21	2.60764	0.001211495	2.0E-07	7.1E-09	8.8E-09
UCART1	653378.7	4183263.2	653378.72	4183263.21	2.79188	0.001200884	2.6E-07	9.5E-09	8.6E-09
UCART1	653418.7	4183263.2	653418.72	4183263.21	2.98106	0.00128221	2.8E-07	1.0E-08	9.2E-09
UCART1	653458.7	4183263.2	653458.72	4183263.21	3.17641	0.001366251	3.1E-07	1.1E-08	9.5E-09
UCART1	653498.7	4183263.2	653498.72	4183263.21	3.37929	0.001453496	3.2E-07	1.1E-08	1.0E-08
UCART1	653538.7	4183263.2	653538.72	4183263.21	3.58223	0.001540785	3.4E-07	1.2E-08	1.1E-08
UCART1	654118.7	4183263.2	654118.72	4183263.21	1.56713	0.000674609	1.5E-07	5.3E-09	4.4E-09
UCART1	654458.7	4183263.2	654458.72	4183263.21	1.52216	0.00065471	1.4E-07	5.0E-09	4.7E-09
UCART1	654498.7	4183263.2	654498.72	4183263.21	1.47887	0.00063523	1.4E-07	5.0E-09	4.6E-09
UCART1	654538.7	4183263.2	654538.72	4183263.21	1.43595	0.000617629	1.4E-07	4.9E-09	4.4E-09
UCART1	654578.7	4183263.2	654578.72	4183263.21	1.40215	0.000603188	1.3E-07	4.8E-09	4.4E-09
UCART1	654618.7	4183263.2	654618.72	4183263.21	1.37547	0.000591616	1.3E-07	4.7E-09	4.2E-09
UCART1	654658.7	4183263.2	654658.72	4183263.21	1.354	0.000582381	1.3E-07	4.6E-09	4.2E-09
UCART1	654698.7	4183263.2	654698.72	4183263.21	1.33554	0.000574359	1.3E-07	4.5E-09	4.1E-09
UCART1	654738.7	4183263.2	654738.72	4183263.21	1.3166	0.000566294	1.2E-07	4.5E-09	4.1E-09
UCART1	654778.7	4183263.2	654778.72	4183263.21	1.29883	0.000557791	1.2E-07	4.4E-09	4.0E-09
UCART1	654818.7	4183263.2	654818.72	4183263.21	1.27559	0.000549483	1.2E-07	4.3E-09	3.9E-09
UCART1	654858.7	4183263.2	654858.72	4183263.21	1.25164	0.000538334	1.2E-07	4.2E-09	3.8E-09
UCART1	654898.7	4183263.2	654898.72	4183263.21	1.22649	0.000527536	1.2E-07	4.2E-09	3.8E-09
UCART1	654938.7	4183263.2	654938.72	4183263.21	1.20011	0.000516129	1.1E-07	4.1E-09	3.7E-09
UCART1	654978.7	4183263.2	654978.72	4183263.21	1.17296	0.000504512	1.1E-07	4.0E-09	3.6E-09
UCART1	655018.7	4183263.2	655018.72	4183263.21	1.14514	0.000492546	1.1E-07	3.9E-09	3.5E-09
UCART1	655058.7	4183263.2	655058.72	4183263.21	1.11717	0.000480516	1.1E-07	3.8E-09	3.4E-09
UCART1	655098.7	4183263.2	655098.72	4183263.21	1.08915	0.000468464	1.0E-07	3.7E-09	3.4E-09
UCART1	655138.7	4183263.2	655138.72	4183263.21	1.06084	0.000456287	1.0E-07	3.6E-09	3.3E-09
UCART1	655098.7	4183303.2	655098.72	4183303.21	1.68192	0.000723425	1.6E-07	5.7E-09	5.2E-09
UCART1	655138.7	4183303.2	655138.72	4183303.21	1.78979	0.000769823	1.7E-07	6.1E-09	5.5E-09
UCART1	655178.7	4183303.2	655178.72	4183303.21	1.9084	0.000820939	1.8E-07	6.5E-09	5.9E-09
UCART1	655218.7	4183303.2	655218.72	4183303.21	2.03708	0.000876186	1.9E-07	6.9E-09	6.3E-09
UCART1	655258.7	4183303.2	655258.72	4183303.21	2.17406	0.000935104	2.1E-07	7.4E-09	6.7E-09
UCART1	655298.7	4183303.2	655298.72	4183303.21	2.31871	0.000996627	2.2E-07	7.8E-09	7.1E-09
UCART1	655338.7	4183303.2	655338.72	4183303.21	2.46295	0.001059361	2.3E-07	8.3E-09	7.6E-09
UCART1	655378.7	4183303.2	655378.72	4183303.21	2.61232	0.001123808	2.5E-07	8.9E-09	8.1E-09
UCART1	655418.7	4183303.2	655418.72	4183303.21	2.76655	0.001189898	2.6E-07	9.4E-09	8.5E-09
UCART1	655458.7	4183303.2	655458.72	4183303.21	2.92576	0.001259199	2.8E-07	9.9E-09	9.0E-09
UCART1	655498.7	4183303.2	655498.72	4183303.21	3.08971	0.001328842	2.9E-07	1.0E-08	9.5E-09
UCART1	655538.7	4183303.2	655538.72	4183303.21	3.26247	0.001399112	3.1E-07	1.1E-08	1.0E-08
UCART1	655578.7	4183303.2	655578.72	4183303.21	3.3448	0.001434346	3.2E-07	1.1E-08	1.0E-08
UCART1	655618.7	4183303.2	655618.72	4183303.21	3.36625	0.001447887	3.2E-07	1.1E-08	1.0E-08
UCART1	655658.7	4183303.2	655658.72	4183303.21	3.31674	0.001426592	3.1E-07	1.1E-08	1.0E-08
UCART1	654298.7	4183303.2	654298.72	4183303.21	1.7963	0.000626417	1.8E-07	6.4E-09	5.8E-09
UCART1	654338.7	4183303.2	654338.72	4183303.21	1.4445	0.000621307	1.4E-07	4.9E-09	4.5E-09
UCART1	654378.7	4183303.2	654378.72	4183303.21	1.45575	0.000608041	1.3E-07	4.8E-09	4.4E-09
UCART1	654418.7	4183303.2	654418.72	4183303.21	1.38553	0.000595851	1.3E-07	4.7E-09	4.3E-09
UCART1	654458.7	4183303.2	654458.72	4183303.21	1.35241	0.000581697	1.3E-07	4.6E-09	4.2E-09
UCART1	654498.7	4183303.2	654498.72	4183303.21	1.3162	0.000566122	1.2E-07	4.5E-09	4.1E-09
UCART1	654538.7	4183303.2	654538.72	4183303.21	1.27907	0.000550152	1.2E-07	4.3E-09	3.9E-09
UCART1	654578.7	4183303.2	654578.72	4183303.21	1.24461	0.000535333	1.2E-07	4.2E-09	3.8E-09
UCART1	654618.7	4183303.2	654618.72	4183303.21	1.21548	0.000522801	1.2E-07	4.1E-09	3.7E-09
UCART1	654658.7	4183303.2	654658.72	4183303.21	1.19215	0.000510766	1.1E-07	4.0E-09	3.6E-09
UCART1	654698.7	4183303.2	654698.72	4183303.21	1.17366	0.000504818	1.1E-07	3.9E-09	3.4E-09
UCART1	654738.7	4183303.2	654738.72	4183303.21	1.15832	0.000498215	1.1E-07	3.9E-09	3.6E-09
UCART1	654778.7	4183303.2	654778.72	4183303.21	1.14423	0.000492155	1.1E-07	3.9E-09	3.5E-09
UCART1	654818.7	4183303.2	654818.72	4183303.21	1.12994	0.000486088	1.1E-07	3.8E-09	3.4E-09
UCART1	654858.7	4183303.2	654858.72	4183303.21	1.11445	0.000479346	1.1E-07	3.8E-09	3.4E-09
UCART1	654898.7	4183303.2	654898.72	4183303.21	1.09745	0.000472034	1.0E-07	3.7E-09	3.4E-09
UCART1	654938.7	4183303.2	654938.72	4183303.21	1.07901	0.000464403	1.0E-07	3.7E-09	3.4E-09
UCART1	654978.7	4183303.2	654978.72	4183303.21	1.05941	0.000456972	1.0E-07	3.6E-09	3.3E-09
UCART1	655018.7	4183303.2	655018.72	4183303.21	1.03893	0.000448663	9.9E-08	3.5E-09	3.2E-09
UCART1	655058.7	4183303.2	655058.72	4183303.21	1.01789	0.000440374	9.7E-08	3.4E-09	3.1E-09
UCART1	655098.7	4183303.2	655098.72	4183303.21	9.98424	0.000432459	9.6E-08	3.4E-09	3.0E-09
UCART1	655138.7	4183303.2	655138.72	4183303.21	0.97444	0.000424125	9.2E-08	3.3E-09	3.0E-09
UCART1	655098.7	4183343.2	655098.72	4183343.21	1.84041	0.000702818	1.6E-07	5.5E-09	5.0E-09
UCART1	655138.7	4183343.2	655138.72	4183343.21	1.92842	0.000746413	1.6E-07	5.8E-09	5.3E-09
UCART1	655178.7	4183343.2	655178.72	4183343.21	1.84358	0.000729598	1.7E-07	6.2E-09	5.7E-09
UCART1	655218.7	4183343.2	655218.72	4183343.21	1.95672	0.000816222	1.9E-07	6.6E-09	6.0E-09
UCART1	655258.7	4183343.2	655258.72	4183343.21	2.07919	0.000891718	2.0E-07	7.0E-09	6.4E-09
UCART1	655298.7	4183343.2	655298.72	4183343.21	2.19306	0.000942416	2.1E-07	7.4E-09	6.8E-09
UCART1	655338.7	4183343.2	655338.72	4183343.21	2.31121	0.000994095	2.2E-07	7.8E-09	7.1E-09
UCART1	655378.7	4183343.2	655378.72	4183343.21	2.43452	0.00104752	2.3E-07	8.3E-09	7.5E-09
UCART1	655418.7	4183343.2	655418.72	4183343.21	2.56491	0.001103116	2.4E-07	8.7E-09	7.9E-09
UCART1	655458.7	4183343.2	655458.72	4183343.21	2.69589	0.001159553	2.6E-07	9.1E-09	8.3E-09
UCART1	655498.7	4183343.2	655498.72	4183343.21	2.81583	0.00121141	2.7E-07	9.5E-09	8.7E-09
UCART1	655538.7	4183343.2	655538.72	4183343.21	2.90299	0.001248674	2.8E-07	9.8E-09	9.0E-09
UCART1	655578.7	4183343.2	655578.72	4183343.21	2.93928	0.00126244	2.8E-07	1.0E-08	9.1E-09
UCART1	655618.7	4183343.2	655618.72	4183343.21	2.91574	0.001254115	2.8E-07	9.9E-09	9.0E-09
UCART1	655658.7	4183343.2	655658.72	4183343.21	2.83009	0.001217275	2.7E-07	9.6E-09	8.7E-09
UCART1	655698.7	4183343.2	655698.72	4183343.21	2.68848	0.001158158	2.6E-07	9.1E-09	8.3E-09
UCART1	654298.7	4183343.2	654298.72	4183343.21	1.31863	0.000567188	1.3E-07	4.5E-09	4.1E-09
UCART1	654338.7	4183343.2	654338.72	4183343.21	1.27927	0.000550238	1.2E-07	4.3E-09	3.9E-09
UCART1	654378.7	4183343.2	654378.72	4183343.21	1.24078	0.000533974	1.2E-07	4.2E-09	3.8E-09
UCART1	654418.7	4183343.2	654418.72	4183343.21	1.23241	0.000530083	1.2E-07	4.2E-09	3.8E-09
UCART1	654458.7	4183343.2	654458.72	4183343.21	1.20828	0.000519704	1.1E-07	4.1E-09	3.7E-09
UCART1	654498.7	4183343.2	654498.72	4183343.21	1.18153	0.000505199	1.1E-07	4.0E-09	3.6E-09
UCART1	654538.7	4183343.2	654538.72	4183343.21	1.1519	0.000495454	1.1E-07	3.9E-09	3.6E-09
UCART1	654578.7	4183343.2	654578.72	4183343.21	1.12103	0.000482176	1.1E-07	3.8E-09	3.5E-09
UCART1	654618.7	4183343.2	654618.72	4183343.21	1.0917	0.000468961	1.0E-07	3.7E-09	3.4E-09
UCART1	654658.7	4183343.2	654658.72	4183343.21	1.06263	0.000456144	1.0E-07	3.6E-09	3.3E-09
UCART1	654698.7	4183343.2	654698.72	4183343.21	1.0456	0.000443932	9.9E-08	3.5E-09	3.2E-09
UCART1	654738.7	4183343.2	654738.72	4183343.21	1.02917	0.000432465	9.8E-08	3.5E-09	3.2E-09
UCART1	654778.7	4183343.2	654778.72	4183343.21	1.01400	0.000421022	1.0E-07	3.4E-09	3.1E-09

UCART1	653978.7	4183423.2	653978.72	4183423.21	1.37693	0.000592244	1.3E-07	4.7E-09	4.2E-09
UCART1	654018.7	4183423.2	654018.72	4183423.21	1.5374	0.000582269	1.3E-07	4.6E-09	4.2E-09
UCART1	654058.7	4183423.2	654058.72	4183423.21	1.338	0.000754949	1.3E-07	4.5E-09	4.1E-09
UCART1	654098.7	4183423.2	654098.72	4183423.21	1.32057	0.000568002	1.3E-07	4.5E-09	4.1E-09
UCART1	654298.7	4183423.2	654298.72	4183423.21	1.02285	0.000470055	1.0E-07	3.7E-09	3.4E-09
UCART1	654338.7	4183423.2	654338.72	4183423.21	1.0413	0.000447883	1.0E-07	3.6E-09	3.3E-09
UCART1	654378.7	4183423.2	654378.72	4183423.21	1.00993	0.000434339	1.0E-07	3.4E-09	3.1E-09
UCART1	654418.7	4183423.2	654418.72	4183423.21	0.92021	0.000426682	9.4E-08	3.4E-09	3.1E-09
UCART1	654458.7	4183423.2	654458.72	4183423.21	0.97031	0.000425659	9.3E-08	3.3E-09	3.0E-09
UCART1	654498.7	4183423.2	654498.72	4183423.21	0.96336	0.000414359	9.1E-08	3.3E-09	3.0E-09
UCART1	654538.7	4183423.2	654538.72	4183423.21	0.94715	0.000407387	9.0E-08	3.2E-09	2.9E-09
UCART1	654578.7	4183423.2	654578.72	4183423.21	0.92885	0.000399516	8.8E-08	3.1E-09	2.9E-09
UCART1	654618.7	4183423.2	654618.72	4183423.21	0.90814	0.000390608	8.6E-08	3.1E-09	2.8E-09
UCART1	654658.7	4183423.2	654658.72	4183423.21	0.88605	0.000381107	8.4E-08	3.0E-09	2.7E-09
UCART1	654698.7	4183423.2	654698.72	4183423.21	0.86249	0.000371747	8.2E-08	2.9E-09	2.7E-09
UCART1	654738.7	4183423.2	654738.72	4183423.21	0.84651	0.000362383	8.0E-08	2.9E-09	2.6E-09
UCART1	654778.7	4183423.2	654778.72	4183423.21	0.82801	0.000356143	7.9E-08	2.8E-09	2.6E-09
UCART1	654818.7	4183423.2	654818.72	4183423.21	0.81457	0.000350362	7.7E-08	2.8E-09	2.5E-09
UCART1	654858.7	4183423.2	654858.72	4183423.21	0.80388	0.000345764	7.6E-08	2.7E-09	2.5E-09
UCART1	654898.7	4183423.2	654898.72	4183423.21	0.79526	0.000342056	7.5E-08	2.7E-09	2.5E-09
UCART1	654938.7	4183423.2	654938.72	4183423.21	0.78788	0.000338882	7.5E-08	2.7E-09	2.4E-09
UCART1	654978.7	4183423.2	654978.72	4183423.21	0.78093	0.000335893	7.4E-08	2.6E-09	2.4E-09
UCART1	655018.7	4183423.2	655018.72	4183423.21	0.77485	0.000332947	7.3E-08	2.6E-09	2.4E-09
UCART1	655058.7	4183423.2	655058.72	4183423.21	0.76908	0.000329505	7.3E-08	2.6E-09	2.4E-09
UCART1	655098.7	4183423.2	655098.72	4183423.21	0.76357	0.000325845	7.2E-08	2.6E-09	2.3E-09
UCART1	655138.7	4183423.2	655138.72	4183423.21	0.75826	0.000322184	7.1E-08	2.5E-09	2.3E-09
UCART1	655098.7	4183463.2	655098.72	4183463.21	1.47431	0.000633375	1.4E-07	5.0E-09	4.5E-09
UCART1	655138.7	4183463.2	655138.72	4183463.21	1.54011	0.00066243	1.5E-07	5.2E-09	4.7E-09
UCART1	655178.7	4183463.2	655178.72	4183463.21	1.60721	0.000691291	1.5E-07	5.4E-09	4.9E-09
UCART1	655218.7	4183463.2	655218.72	4183463.21	1.67634	0.000720939	1.6E-07	5.7E-09	5.2E-09
UCART1	655258.7	4183463.2	655258.72	4183463.21	1.74767	0.000751706	1.7E-07	5.9E-09	5.4E-09
UCART1	655298.7	4183463.2	655298.72	4183463.21	1.8223	0.000783806	1.7E-07	6.2E-09	5.6E-09
UCART1	655338.7	4183463.2	655338.72	4183463.21	1.89745	0.000816188	1.8E-07	6.4E-09	5.8E-09
UCART1	655378.7	4183463.2	655378.72	4183463.21	1.968	0.000848474	1.9E-07	6.7E-09	6.1E-09
UCART1	655418.7	4183463.2	655418.72	4183463.21	2.02526	0.000871102	1.9E-07	6.9E-09	6.2E-09
UCART1	655458.7	4183463.2	655458.72	4183463.21	2.06935	0.000894455	1.9E-07	7.1E-09	6.4E-09
UCART1	655498.7	4183463.2	655498.72	4183463.21	2.06849	0.000898966	2.0E-07	7.0E-09	6.4E-09
UCART1	655538.7	4183463.2	655538.72	4183463.21	2.04706	0.000880479	1.9E-07	6.9E-09	6.3E-09
UCART1	655578.7	4183463.2	655578.72	4183463.21	1.998	0.000859377	1.9E-07	6.8E-09	6.2E-09
UCART1	655618.7	4183463.2	655618.72	4183463.21	1.91949	0.000825609	1.8E-07	6.5E-09	5.9E-09
UCART1	655658.7	4183463.2	655658.72	4183463.21	1.81346	0.000780003	1.7E-07	6.1E-09	5.6E-09
UCART1	655698.7	4183463.2	655698.72	4183463.21	1.69742	0.000730792	1.6E-07	5.8E-09	5.2E-09
UCART1	655738.7	4183463.2	655738.72	4183463.21	1.59555	0.00068476	1.5E-07	5.5E-09	5.0E-09
UCART1	655778.7	4183463.2	655778.72	4183463.21	1.51486	0.00065157	1.4E-07	5.1E-09	4.7E-09
UCART1	655818.7	4183463.2	655818.72	4183463.21	1.44563	0.000621793	1.4E-07	4.9E-09	4.5E-09
UCART1	655858.7	4183463.2	655858.72	4183463.21	1.37951	0.000593353	1.3E-07	4.7E-09	4.3E-09
UCART1	655898.7	4183463.2	655898.72	4183463.21	1.3182	0.000566983	1.3E-07	4.5E-09	4.1E-09
UCART1	655938.7	4183463.2	655938.72	4183463.21	1.26722	0.000545055	1.2E-07	4.3E-09	3.9E-09
UCART1	655978.7	4183463.2	655978.72	4183463.21	1.2228	0.000528525	1.2E-07	4.2E-09	3.8E-09
UCART1	656018.7	4183463.2	656018.72	4183463.21	1.1843	0.000512919	1.2E-07	4.1E-09	3.7E-09
UCART1	656058.7	4183463.2	656058.72	4183463.21	1.20067	0.000516431	1.1E-07	4.1E-09	3.7E-09
UCART1	656098.7	4183463.2	656098.72	4183463.21	1.18654	0.000510553	1.1E-07	4.0E-09	3.7E-09
UCART1	656138.7	4183463.2	656138.72	4183463.21	1.20962	0.000514474	1.1E-07	4.0E-09	3.7E-09
UCART1	656178.7	4183463.2	656178.72	4183463.21	0.957	0.000411624	9.1E-08	3.2E-09	3.0E-09
UCART1	656198.7	4183463.2	656198.72	4183463.21	0.92023	0.000399808	8.7E-08	3.1E-09	2.9E-09
UCART1	656218.7	4183463.2	656218.72	4183463.21	0.88991	0.000386328	8.4E-08	3.0E-09	2.8E-09
UCART1	656238.7	4183463.2	656238.72	4183463.21	0.86061	0.00038109	8.4E-08	3.0E-09	2.7E-09
UCART1	656258.7	4183463.2	656258.72	4183463.21	0.87479	0.000376264	8.3E-08	3.0E-09	2.7E-09
UCART1	656278.7	4183463.2	656278.72	4183463.21	0.86253	0.00037199	8.2E-08	2.9E-09	2.7E-09
UCART1	656298.7	4183463.2	656298.72	4183463.21	0.8488	0.000365128	8.1E-08	2.9E-09	2.7E-09
UCART1	656318.7	4183463.2	656318.72	4183463.21	0.83346	0.000358487	7.9E-08	2.8E-09	2.6E-09
UCART1	656338.7	4183463.2	656338.72	4183463.21	0.81595	0.000350955	7.7E-08	2.8E-09	2.5E-09
UCART1	656358.7	4183463.2	656358.72	4183463.21	0.79721	0.000342989	7.6E-08	2.7E-09	2.5E-09
UCART1	656378.7	4183463.2	656378.72	4183463.21	0.77813	0.000334888	7.4E-08	2.6E-09	2.4E-09
UCART1	656398.7	4183463.2	656398.72	4183463.21	0.76067	0.000327178	7.2E-08	2.6E-09	2.3E-09
UCART1	656418.7	4183463.2	656418.72	4183463.21	0.7452	0.000320753	7.1E-08	2.5E-09	2.3E-09
UCART1	656438.7	4183463.2	656438.72	4183463.21	0.73339	0.000315445	7.0E-08	2.5E-09	2.3E-09
UCART1	656458.7	4183463.2	656458.72	4183463.21	0.7235	0.000311191	6.9E-08	2.5E-09	2.2E-09
UCART1	656478.7	4183463.2	656478.72	4183463.21	0.71558	0.000307784	6.8E-08	2.4E-09	2.2E-09
UCART1	656498.7	4183463.2	656498.72	4183463.21	0.70901	0.000304994	6.7E-08	2.4E-09	2.2E-09
UCART1	656518.7	4183463.2	656518.72	4183463.21	0.70325	0.000302481	6.7E-08	2.4E-09	2.2E-09
UCART1	656538.7	4183463.2	656538.72	4183463.21	0.69758	0.000300042	6.6E-08	2.4E-09	2.2E-09
UCART1	656558.7	4183463.2	656558.72	4183463.21	0.69163	0.000297483	6.6E-08	2.3E-09	2.1E-09
UCART1	656578.7	4183463.2	656578.72	4183463.21	0.68503	0.000294444	6.5E-08	2.3E-09	2.1E-09
UCART1	656598.7	4183503.2	656598.72	4183503.21	1.40902	0.000606046	1.3E-07	4.8E-09	4.3E-09
UCART1	656638.7	4183503.2	656638.72	4183503.21	1.46088	0.000635089	1.4E-07	5.0E-09	4.5E-09
UCART1	656678.7	4183503.2	656678.72	4183503.21	1.52471	0.000665806	1.4E-07	5.2E-09	4.7E-09
UCART1	656718.7	4183503.2	656718.72	4183503.21	1.58572	0.000698208	1.5E-07	5.4E-09	4.9E-09
UCART1	656758.7	4183503.2	656758.72	4183503.21	1.64936	0.000729421	1.6E-07	5.6E-09	5.1E-09
UCART1	656798.7	4183503.2	656798.72	4183503.21	1.71353	0.000761022	1.6E-07	5.8E-09	5.3E-09
UCART1	656838.7	4183503.2	656838.72	4183503.21	1.774	0.000793031	1.7E-07	6.0E-09	5.5E-09
UCART1	656878.7	4183503.2	656878.72	4183503.21	1.84223	0.000824636	1.7E-07	6.2E-09	5.6E-09
UCART1	656918.7	4183503.2	656918.72	4183503.21	1.87722	0.000856241	1.8E-07	6.3E-09	5.7E-09
UCART1	656958.7	4183503.2	656958.72	4183503.21	1.88885	0.000863828	1.8E-07	6.3E-09	5.8E-09
UCART1	656998.7	4183503.2	656998.72	4183503.21	1.86337	0.000859846	1.8E-07	6.3E-09	5.7E-09
UCART1	657038.7	4183503.2	657038.72	4183503.21	1.82096	0.000851299	1.7E-07	6.2E-09	5.6E-09
UCART1	657078.7	4183503.2	657078.72	4183503.21	1.76905	0.000837831	1.7E-07	6.0E-09	5.4E-09
UCART1	657118.7	4183503.2	657118.72	4183503.21	1.68155	0.000823266	1.6E-07	5.7E-09	5.2E-09
UCART1	657158.7	4183503.2	657158.72	4183503.21	1.5835	0.000808193	1.5E-07	5.4E-09	4.9E-09
UCART1	657198.7	4183503.2	657198.72	4183503.21	1.48718	0.000793975	1.4E-07	5.0E-09	4.6E-09
UCART1	657238.7	4183503.2	657238.72	4183503.21	1.40831	0.000780571	1.3E-07	4.8E-09	4.3E-09
UCART1	657278.7	4183503.2	657278.72	4183503.21	1.34624	0.00076813	1.3E-07	4.6E-09	4.1E-09
UCART1	657318.7	4183503.2	657318.72	4183503.21	1.2886	0.000756425	1.2E-07	4.4E-09	3.9E-09
UCART1	657358.7	4183503.2	657358.72	4183503.21	1.23442	0.000745357	1.2E		

UCART1	654618.7	4183543.2	654618.72	4183543.21	0.70532	0.000303371	6.7E-08	2.4E-09	2.2E-09
UCART1	654658.7	4183543.2	654658.72	4183543.21	0.69554	0.000299105	6.6E-08	2.4E-09	2.1E-09
UCART1	654698.7	4183543.2	654698.72	4183543.21	0.68444	0.000294391	6.4E-08	2.3E-09	2.1E-09
UCART1	654738.7	4183543.2	654738.72	4183543.21	0.67153	0.000288838	6.4E-08	2.3E-09	2.1E-09
UCART1	654778.7	4183543.2	654778.72	4183543.21	0.65731	0.000282721	6.2E-08	2.2E-09	2.0E-09
UCART1	654818.7	4183543.2	654818.72	4183543.21	0.64275	0.000276476	6.1E-08	2.2E-09	2.0E-09
UCART1	654858.7	4183543.2	654858.72	4183543.21	0.62886	0.000270485	6.0E-08	2.1E-09	1.9E-09
UCART1	654898.7	4183543.2	654898.72	4183543.21	0.61656	0.000265194	5.8E-08	2.1E-09	1.9E-09
UCART1	654938.7	4183543.2	654938.72	4183543.21	0.60614	0.000260712	5.7E-08	2.1E-09	1.9E-09
UCART1	654978.7	4183543.2	654978.72	4183543.21	0.59748	0.000256987	5.7E-08	2.0E-09	1.8E-09
UCART1	655018.7	4183543.2	655018.72	4183543.21	0.59058	0.00025402	5.6E-08	2.0E-09	1.8E-09
UCART1	655058.7	4183543.2	655058.72	4183543.21	0.58498	0.000251611	5.5E-08	2.0E-09	1.8E-09
UCART1	655098.7	4183543.2	655098.72	4183543.21	0.58037	0.000249628	5.5E-08	2.0E-09	1.8E-09
UCART1	655138.7	4183543.2	655138.72	4183543.21	0.57629	0.000247873	5.5E-08	2.0E-09	1.8E-09
UCART1	655098.7	4183583.2	655098.72	4183583.21	1.28044	0.000550741	1.2E-07	4.3E-09	3.9E-09
UCART1	655138.7	4183583.2	655138.72	4183583.21	1.31626	0.000570441	1.3E-07	4.5E-09	4.1E-09
UCART1	655178.7	4183583.2	655178.72	4183583.21	1.37381	0.000590902	1.3E-07	4.7E-09	4.2E-09
UCART1	655218.7	4183583.2	655218.72	4183583.21	1.42185	0.000611564	1.3E-07	4.8E-09	4.4E-09
UCART1	655258.7	4183583.2	655258.72	4183583.21	1.46727	0.000631186	1.4E-07	5.0E-09	4.5E-09
UCART1	655298.7	4183583.2	655298.72	4183583.21	1.50951	0.00064815	1.4E-07	5.1E-09	4.6E-09
UCART1	655338.7	4183583.2	655338.72	4183583.21	1.5537	0.000665533	1.5E-07	5.2E-09	4.7E-09
UCART1	655378.7	4183583.2	655378.72	4183583.21	1.55001	0.000666688	1.5E-07	5.3E-09	4.8E-09
UCART1	655418.7	4183583.2	655418.72	4183583.21	1.54802	0.000669833	1.5E-07	5.2E-09	4.8E-09
UCART1	655458.7	4183583.2	655458.72	4183583.21	1.53012	0.000658133	1.5E-07	5.2E-09	4.7E-09
UCART1	655498.7	4183583.2	655498.72	4183583.21	1.49796	0.000644401	1.4E-07	5.1E-09	4.6E-09
UCART1	655538.7	4183583.2	655538.72	4183583.21	1.45103	0.000624115	1.4E-07	4.9E-09	4.5E-09
UCART1	655578.7	4183583.2	655578.72	4183583.21	1.38819	0.000597087	1.3E-07	4.7E-09	4.3E-09
UCART1	655618.7	4183583.2	655618.72	4183583.21	1.34145	0.000565241	1.2E-07	4.5E-09	4.1E-09
UCART1	655658.7	4183583.2	655658.72	4183583.21	1.30664	0.000536623	1.2E-07	4.4E-09	3.9E-09
UCART1	655698.7	4183583.2	655698.72	4183583.21	1.17852	0.000509004	1.1E-07	4.0E-09	3.6E-09
UCART1	655738.7	4183583.2	655738.72	4183583.21	1.12918	0.000485682	1.1E-07	3.8E-09	3.5E-09
UCART1	655778.7	4183583.2	655778.72	4183583.21	1.08678	0.000467445	1.0E-07	3.7E-09	3.4E-09
UCART1	655818.7	4183583.2	655818.72	4183583.21	1.04606	0.000449883	9.2E-08	3.5E-09	3.2E-09
UCART1	655858.7	4183583.2	655858.72	4183583.21	1.00643	0.000432884	9.5E-08	3.4E-09	3.1E-09
UCART1	655898.7	4183583.2	655898.72	4183583.21	0.97003	0.000417228	9.2E-08	3.3E-09	3.0E-09
UCART1	655938.7	4183583.2	655938.72	4183583.21	0.93897	0.000402456	9.2E-08	3.2E-09	2.9E-09
UCART1	655978.7	4183583.2	655978.72	4183583.21	0.91934	0.000395425	8.7E-08	3.1E-09	2.8E-09
UCART1	656018.7	4183583.2	656018.72	4183583.21	0.90721	0.000390208	8.6E-08	3.1E-09	2.8E-09
UCART1	656058.7	4183583.2	656058.72	4183583.21	0.89995	0.000387077	8.5E-08	3.0E-09	2.8E-09
UCART1	656098.7	4183583.2	656098.72	4183583.21	0.89211	0.000383713	8.5E-08	3.0E-09	2.8E-09
UCART1	656138.7	4183583.2	656138.72	4183583.21	0.88299	0.000379791	8.4E-08	3.0E-09	2.7E-09
UCART1	656178.7	4183583.2	656178.72	4183583.21	0.87531	0.000376487	8.3E-08	3.0E-09	2.7E-09
UCART1	656218.7	4183583.2	656218.72	4183583.21	0.86517	0.000372126	8.2E-08	2.9E-09	2.7E-09
UCART1	656258.7	4183583.2	656258.72	4183583.21	0.84546	0.000363648	8.0E-08	2.9E-09	2.6E-09
UCART1	656298.7	4183583.2	656298.72	4183583.21	0.84444	0.000363006	7.7E-08	2.8E-09	2.5E-09
UCART1	656338.7	4183583.2	656338.72	4183583.21	0.77616	0.000338841	7.4E-08	2.7E-09	2.4E-09
UCART1	656378.7	4183583.2	656378.72	4183583.21	0.73748	0.000317204	7.0E-08	2.5E-09	2.3E-09
UCART1	656418.7	4183583.2	656418.72	4183583.21	0.70556	0.000303475	6.7E-08	2.4E-09	2.2E-09
UCART1	656458.7	4183583.2	656458.72	4183583.21	0.68883	0.000294128	6.5E-08	2.3E-09	2.1E-09
UCART1	656498.7	4183583.2	656498.72	4183583.21	0.67118	0.000288687	6.4E-08	2.3E-09	2.1E-09
UCART1	656538.7	4183583.2	656538.72	4183583.21	0.66366	0.000285453	6.3E-08	2.2E-09	2.0E-09
UCART1	656578.7	4183583.2	656578.72	4183583.21	0.65753	0.000282816	6.2E-08	2.2E-09	2.0E-09
UCART1	656618.7	4183583.2	656618.72	4183583.21	0.65087	0.000279951	6.2E-08	2.2E-09	2.0E-09
UCART1	656658.7	4183583.2	656658.72	4183583.21	0.64345	0.00027676	6.1E-08	2.2E-09	2.0E-09
UCART1	656698.7	4183583.2	656698.72	4183583.21	0.63505	0.000273747	6.0E-08	2.2E-09	2.0E-09
UCART1	656738.7	4183583.2	656738.72	4183583.21	0.62551	0.000270844	5.9E-08	2.1E-09	1.9E-09
UCART1	656778.7	4183583.2	656778.72	4183583.21	0.61427	0.000267409	5.8E-08	2.1E-09	1.9E-09
UCART1	656818.7	4183583.2	656818.72	4183583.21	0.60184	0.000263863	5.7E-08	2.0E-09	1.9E-09
UCART1	656858.7	4183583.2	656858.72	4183583.21	0.58986	0.000260323	5.6E-08	2.0E-09	1.8E-09
UCART1	656898.7	4183583.2	656898.72	4183583.21	0.5765	0.000257984	5.5E-08	2.0E-09	1.8E-09
UCART1	656938.7	4183583.2	656938.72	4183583.21	0.56516	0.000254386	5.4E-08	1.9E-09	1.7E-09
UCART1	656978.7	4183583.2	656978.72	4183583.21	0.55555	0.000251893	5.3E-08	1.9E-09	1.7E-09
UCART1	657018.7	4183583.2	657018.72	4183583.21	0.54747	0.000249477	5.2E-08	1.9E-09	1.7E-09
UCART1	657058.7	4183583.2	657058.72	4183583.21	0.54091	0.000247256	5.1E-08	1.8E-09	1.7E-09
UCART1	657098.7	4183583.2	657098.72	4183583.21	0.53568	0.000245068	5.1E-08	1.8E-09	1.7E-09
UCART1	657138.7	4183623.2	657138.72	4183623.21	0.52887	0.000242848	5.0E-08	1.8E-09	1.7E-09
UCART1	657178.7	4183623.2	657178.72	4183623.21	1.22126	0.000525287	1.2E-07	4.1E-09	3.8E-09
UCART1	657218.7	4183623.2	657218.72	4183623.21	1.26287	0.000543184	1.2E-07	4.3E-09	3.9E-09
UCART1	657258.7	4183623.2	657258.72	4183623.21	1.30492	0.000561271	1.2E-07	4.4E-09	4.0E-09
UCART1	657298.7	4183623.2	657298.72	4183623.21	1.34508	0.000579544	1.3E-07	4.5E-09	4.1E-09
UCART1	657338.7	4183623.2	657338.72	4183623.21	1.38027	0.000595368	1.3E-07	4.7E-09	4.3E-09
UCART1	657378.7	4183623.2	657378.72	4183623.21	1.40673	0.000610501	1.3E-07	4.8E-09	4.4E-09
UCART1	657418.7	4183623.2	657418.72	4183623.21	1.4164	0.000611474	1.3E-07	4.8E-09	4.4E-09
UCART1	657458.7	4183623.2	657458.72	4183623.21	1.42283	0.000611986	1.3E-07	4.8E-09	4.4E-09
UCART1	657498.7	4183623.2	657498.72	4183623.21	1.41026	0.000606799	1.3E-07	4.8E-09	4.4E-09
UCART1	657538.7	4183623.2	657538.72	4183623.21	1.38558	0.000599586	1.3E-07	4.7E-09	4.3E-09
UCART1	657578.7	4183623.2	657578.72	4183623.21	1.35128	0.000588487	1.2E-07	4.6E-09	4.2E-09
UCART1	657618.7	4183623.2	657618.72	4183623.21	1.31818	0.000574897	1.2E-07	4.5E-09	4.1E-09
UCART1	657658.7	4183623.2	657658.72	4183623.21	1.28042	0.000560292	1.1E-07	4.4E-09	4.0E-09
UCART1	657698.7	4183623.2	657698.72	4183623.21	1.24001	0.000543502	1.1E-07	4.3E-09	3.9E-09
UCART1	657738.7	4183623.2	657738.72	4183623.21	1.20001	0.000527089	1.0E-07	4.2E-09	3.8E-09
UCART1	657778.7	4183623.2	657778.72	4183623.21	1.16001	0.000510784	9.7E-08	4.1E-09	3.7E-09
UCART1	657818.7	4183623.2	657818.72	4183623.21	1.12001	0.000494504	9.4E-08	4.0E-09	3.6E-09
UCART1	657858.7	4183623.2	657858.72	4183623.21	1.08001	0.000478224	9.1E-08	3.9E-09	3.5E-09
UCART1	657898.7	4183623.2	657898.72	4183623.21	1.04001	0.000461944	8.8E-08	3.8E-09	3.4E-09
UCART1	657938.7	4183623.2	657938.72	4183623.21	1.00001	0.000445664	8.5E-08	3.7E-09	3.3E-09
UCART1	657978.7	4183623.2	657978.72	4183623.21	0.96001	0.000429384	8.2E-08	3.6E-09	3.2E-09
UCART1	658018.7	4183623.2	658018.72	4183623.21	0.92001	0.000413104	7.9E-08	3.5E-09	3.1E-09
UCART1	658058.7	4183623.2	658058.72	4183623.21	0.88001	0.000396824	7.6E-08	3.4E-09	3.0E-09
UCART1	658098.7	4183623.2	658098.72	4183623.21	0.84001	0.000380544	7.3E-08	3.3E-09	2.9E-09
UCART1	658138.7	4183623.2	658138.72	4183623.21	0.80001	0.000364264	7.0E-08	3.2E-09	2.8E-09
UCART1	658178.7	4183623.2	658178.72	4183623.21	0.76001	0.000347984	6.7E-08	3.1E-09	2.7E-09
UCART1	658218.7	4183623.2	658218.72	4183623.21	0.72001	0.000331704	6.4E-08	3.0E-09	2.6E-09
UCART1	658258.7	4183623.2	658258.72	4183623.21	0.68001	0.00			

UCART1	654778.7	4183703.2	654778.72, 4183703.21	0.50265	0.000216199	4.8E-08	1.7E-09	1.5E-09
UCART1	654818.7	4183703.2	654818.72, 4183703.21	0.49702	0.000213778	4.7E-08	1.7E-09	1.5E-09
UCART1	654858.7	4183703.2	654858.72, 4183703.21	0.4906	0.000211616	4.7E-08	1.7E-09	1.5E-09
UCART1	654898.7	4183703.2	654898.72, 4183703.21	0.48299	0.000207743	4.6E-08	1.6E-09	1.5E-09
UCART1	654938.7	4183703.2	654938.72, 4183703.21	0.47427	0.000203992	4.5E-08	1.6E-09	1.5E-09
UCART1	654978.7	4183703.2	654978.72, 4183703.21	0.46504	0.000200022	4.4E-08	1.6E-09	1.4E-09
UCART1	655018.7	4183703.2	655018.72, 4183703.21	0.4558	0.000196048	4.3E-08	1.5E-09	1.4E-09
UCART1	655058.7	4183703.2	655058.72, 4183703.21	0.44704	0.00019228	4.2E-08	1.5E-09	1.4E-09
UCART1	655098.7	4183703.2	655098.72, 4183703.21	0.43911	0.000188555	4.2E-08	1.5E-09	1.4E-09
UCART1	655138.7	4183703.2	655138.72, 4183703.21	0.43261	0.000186074	4.1E-08	1.5E-09	1.3E-09

APPENDIX D
CULTURAL RESOURCES TECHNICAL REPORT



WoodSprings Suites 120 Retail Project

Cultural Resources Technical Report

prepared for

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October 2023



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Bilchak, R., A. Ogaz, C. Montgomery, H. Blind, and B. Campbell-King

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Appendices

Appendix A	California Historical Resources Information System Records Search Results
Appendix B	Native American Heritage Commission Sacred Lands File Search Results

Executive Summary

Rincon Consultants, Inc. (Rincon) was retained by Kimely-Horn to conduct a cultural resources assessment for the WoodSprings Suites 120 Retail Project (project), in the city of Manteca, San Joaquin County, California. Totalling approximately 18.4-acres, the project is located northeast of the intersection of Airport Way and West Atherton Drive, south of Highway 120. The project involves the development of general retail stores, restaurants, a convenience store and gas station, a hotel, a car dealership, and parking. The project is subject to the California Environmental Quality Act (CEQA). The City of Manteca is the lead agency under CEQA.

This assessment included background research, a cultural resources records search at the California Historical Resources Information System (CHRIS), a Sacred Lands File search, a geoarchaeological analysis, review of historical aerial and topographic maps, a pedestrian survey of the project site, and the preparation of this report to summarize the results of these activities.

The CHRIS records search identified three cultural resources within 0.5-mile of the project site. All three resources (P-39-00590, P-39-005337, and P-39-005422) are historic-period built-environment structures. These resources are located outside the project site boundary and will remain unaffected by any project development activities. The record search determined the project site had not been previously surveyed for cultural resources. The record searches and subsequent pedestrian survey conducted by Rincon identified no cultural resources within the project site.

The absence of substantial prehistoric or historic-period archaeological remains within the immediate vicinity, along with the existing level of disturbance in the project site suggests there is low sensitivity for encountering intact subsurface archaeological deposits. Under CEQA, Rincon recommends a finding of ***no impact to historical resources*** and ***less than significant impact with mitigation for archaeological resources***. As standard best management practices under CEQA, Rincon has recommended measures in the unlikely event of an unanticipated discovery during construction.

1 Introduction

Rincon Consultants, Inc. (Rincon) was retained by Kimley-Horn to conduct a cultural resources study for the WoodSprings Suites 120 Retail Project (project) in the city of Manteca, San Joaquin County, California. This technical report documents the results of the study and tasks conducted by Rincon, specifically, a cultural resources records search, Sacred Lands File (SLF) search, and a field survey. This study has been completed pursuant to the requirements of the California Environmental Quality Act (CEQA). The City of Manteca (City) is the lead agency under CEQA.

1.1 Project Site and Description

The project site consists of 18.4 acres, located in a residential and commercial area characterized by a mix of single-family homes, apartment complexes, restaurants, Costco, and a general shopping center, as well as Highway 120 (Hwy) . Specifically, the project encompasses portions of Sections 6, 7 and 12 of Township 2 South, Range 6 and 7 East on the *Lathrop and Manteca, California* United States Geological Survey (USGS) 7.5-minute topographic quadrangles (Figure 1). The project site encompasses Assessor's Parcel Number 226-160-21, and is bounded by Airport Way to the west, West Atherton Drive to the south, and Hwy 120 (County Road J3) to the north. The project site will be divided into three distinct parcels, as identified in Figure 2 and discussed below.

The following project description has been adapted from information provided by Kimley Horn on August 24, 2023.

Parcel 1 is 11.02 acres and is located in the southwest corner of the project site. This parcel will be developed with a general retail area comprising five buildings with a total of 58,000 square feet of space, primarily clustered in the northeast portion of this parcel. The five buildings that are planned as part of the general retail area include three major retail stores, ranging from 6,000 to 23,000 square feet, and two smaller retail buildings. Adjacent to the general retail area within Parcel 1, proposed is a restaurant area with four buildings totaling 13,900 square feet, positioned along the northwest and southeast corners of the parcel. Meanwhile, the southwest section of Parcel 1 will accommodate a convenience store (2,500 square feet) and a gas station with three fuel islands, accessible via separate access points on Airport Way and West Atherton Drive. Three access points to Parcel 1, located on West Atherton Drive and Airport Way, provide direct entry to the general retail, restaurants, and a convenience store with a gas station.

Parcel 2 is situated in the northeast portion of the project site, and a four-story hotel is proposed with 120 rooms, occupying approximately 2.38 acres. The hotel will share its entrance on West Atherton Drive with the proposed car dealership (Parcel 3), and the property will be landscaped with dense trees on the southeast side, demarcating the site.

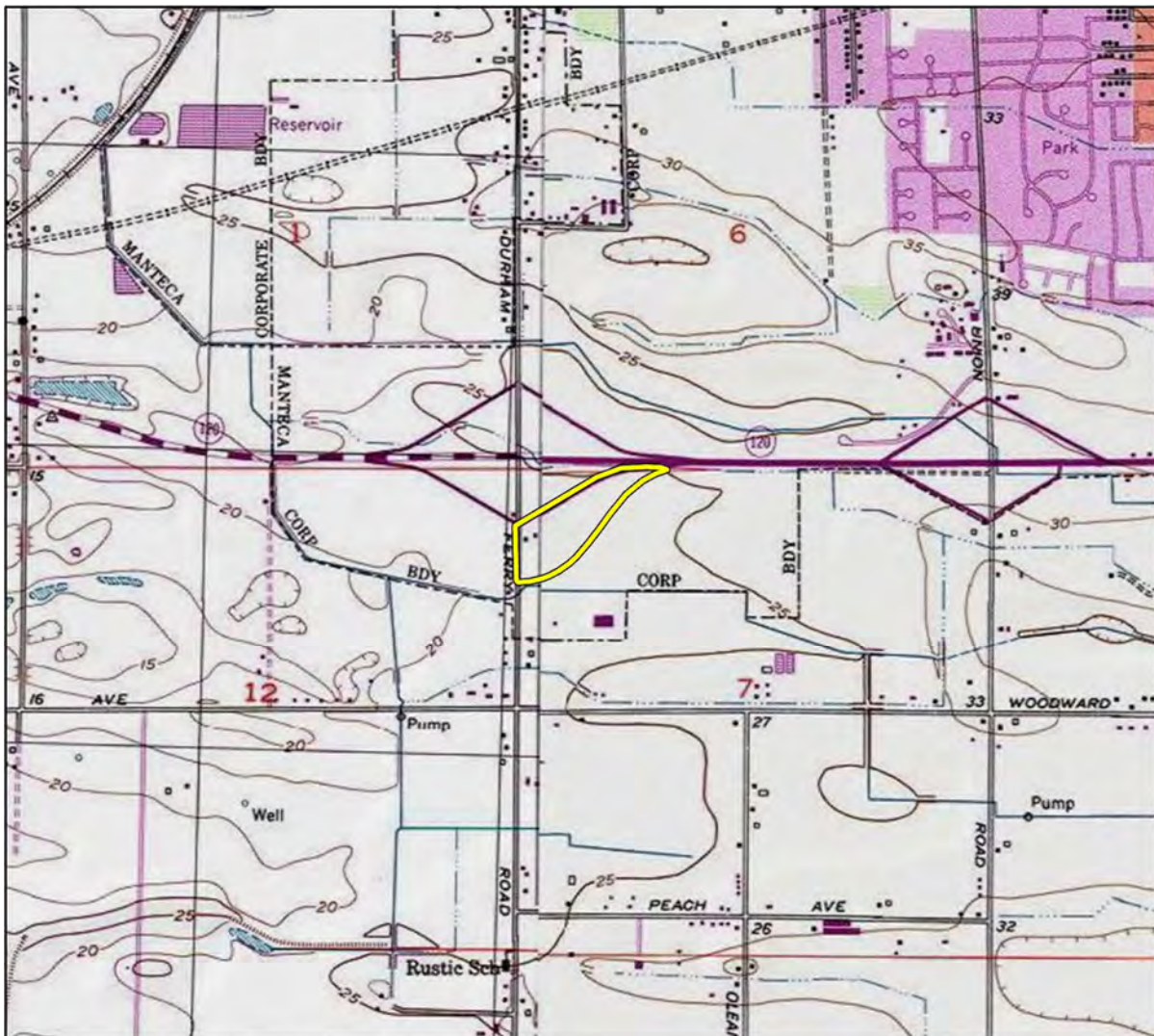
Lastly, Parcel 3 is located in the northeastern corner of the project site, will be utilized for a 30,942-square-foot car dealership with 108 parking stalls. Access to this parcel will be primarily through the northern-most access point on West Atherton Drive, with a shared access point opposite Sparrowhawk Street, connecting it to the adjacent hotel on Parcel 2.

Ground disturbing activities include installation of utilities and trenching. The maximum depth of ground disturbing activities for all three parcels is six feet.

1.2 Personnel

Rincon Archaeologist and Project Manager Courtney Montgomery, MA, served as the project manager for this cultural resources study, completed the field survey, and is a contributing author of this technical report. Ms. Montgomery meets and exceeds the Secretary of the Interior's Professional Qualifications Standards for archeology and history (National Park Service 1983). Cultural Resources Program Manager and Senior Archaeologist Heather Blind MA, Registered Professional Archaeologist (RPA), provided management oversight and reviewed the project for archaeological resources. Archaeologist Rachel Bilchak, BA, BS, Registered Archaeologist (RA) is the primary author of the report. Assistant Project Manager and archaeologist Andrea Ogaz, MA, RPA, is a contributing author of the report and completed the Native American outreach assistance for this project. Geographic Information Systems Analyst Abby Robles prepared the figures found in this report. Cultural Resources Program Manager and Senior Archaeologist Breana Campbell-King, MA, RPA, reviewed this report for quality control.

Figure 1 Regional Location



Basemap provided by National Geographic Society, Esri and their licensors © 2023. Lathrop and Manteca Quadrangles. T02S R06E S12 & T02S R07E S06, 07. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

23-14491-01
 CRFig 1 Proj Locn Map

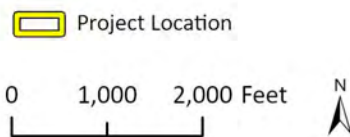


Figure 2 Project Location Map



2 Regulatory Setting

This section includes a discussion of the applicable state and local laws, ordinances, regulations, and standards governing cultural resources, which must be adhered to before and during implementation of the project.

2.1 California Environmental Quality Act

California Public Resources Code (PRC) Section 21084.1 requires lead agencies to determine if a project could have a significant impact on historical or unique archaeological resources. As defined in PRC Section 21084.1, a historical resource is a resource listed in, or determined eligible for listing in, the California Register of Historical Resources (CRHR), a resource included in a local register of historical resources or identified in a historical resources survey pursuant to PRC Section 5024.1(g), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant. PRC Section 21084.1 also states resources meeting the above criteria are presumed to be historically or cultural significant unless the preponderance of evidence demonstrates otherwise. Resources listed in the National Register of Historic Places (NRHP) are automatically listed in the CRHR, as are California Historical Landmarks 770 and above; both are therefore historical resources under CEQA. Historical resources may include eligible built environment resources and archaeological resources of the precontact or historic periods.

CEQA Guidelines Section 15064.5(c) provides further guidance on the consideration of archaeological resources. If an archaeological resource does not qualify as a historical resource, it may meet the definition of a “unique archaeological resource” as identified in PRC Section 21083.2. PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: 1) it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information, 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.

If an archaeological resource does not qualify as a historical or unique archaeological resource, the impacts of a project on those resources will be less than significant and need not be considered further (CEQA Guidelines Section 15064.5[c][4]). CEQA Guidelines Section 15064.5 also provides guidance for addressing the potential presence of human remains, including those discovered during the implementation of a project.

According to CEQA, an impact that results in a substantial adverse change in the significance of a historical resource is considered a significant impact on the environment. A substantial adverse change could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (CEQA Guidelines Section 15064.5 [b][1]). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR or a local register (CEQA Guidelines Section 15064.5[b][2][A]).

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a][b]).

The requirements for mitigation measures under CEQA are outlined in CEQA Guidelines Section 15126.4(a)(1). In addition to being fully enforceable, mitigation measures must be completed within a defined time period and be roughly proportional to the impacts of the project. Generally, a project which is found to comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (the Standards) is considered to be mitigated below a level of significance (CEQA Guidelines Section 15126.4 [b][1]). For historical resources of an archaeological nature, lead agencies should also seek to avoid damaging effects where feasible. Preservation in place is the preferred manner to mitigate impacts to archaeological sites; however, data recovery through excavation may be the only option in certain instances (CEQA Guidelines Section 15126.4[b][3]).

2.1.1 National Register of Historic Places

Although the project does not have a federal nexus, properties which are listed in or have been formally determined eligible for listing in the NRHP are automatically listed in the CRHR. The following is therefore presented to provide applicable regulatory context. The NRHP was authorized by Section 101 of the National Historic Preservation Act and is the nation's official list of cultural resources worthy of preservation. The NRHP recognizes the quality of significance in American, state, and local history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects. Per 36 CFR Part 60.4, a property is eligible for listing in the NRHP if it meets one or more of the following criteria:

- Criterion A:** Is associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B:** Is associated with the lives of persons significant in our past
- Criterion C:** Embodies the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D:** Has yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting at least one of the above designation criteria, resources must also retain integrity. The National Park Service recognizes seven aspects or qualities that, considered together, define historic integrity. To retain integrity, a property must possess several, if not all, of these seven qualities, defined as follows:

- Location:** The place where the historic property was constructed or the place where the historic event occurred
- Design:** The combination of elements that create the form, plan, space, structure, and style of a property
- Setting:** The physical environment of a historic property
- Materials:** The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property

- Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory
- Feeling:** A property’s expression of the aesthetic or historic sense of a particular period of time
- Association:** The direct link between an important historic event or person and a historic property

Certain properties are generally considered ineligible for listing in the NRHP, including cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions, relocated structures, or commemorative properties. Additionally, a property must be at least 50 years of age to be eligible for listing in the NRHP. The National Park Service states that 50 years is the general estimate of the time needed to develop the necessary historical perspective to evaluate significance (National Park Service 1997:41). Properties which are less than 50 years must be determined to have “exceptional importance” to be considered eligible for NRHP listing.

2.1.2 California Register of Historical Resources

The CRHR was established in 1992 and codified by PRC Sections 5024.1 and Title 14 Section 4852. The CRHR is an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code, 5024.1(a)). The criteria for eligibility for the CRHR are consistent with the NRHP criteria but have been modified for state use in order to include a range of historical resources that better reflect the history of California (Public Resources Code, 5024.1(b)). Unlike the NRHP however, the CRHR does not have a defined age threshold for eligibility; rather, a resource may be eligible for the CRHR if it can be demonstrated sufficient time has passed to understand its historical or architectural significance (California Office of Historic Preservation 2011). Furthermore, resources may still be eligible for listing in the CRHR even if they do not retain sufficient integrity for NRHP eligibility (California Office of Historic Preservation 2011). Generally, the California Office of Historic Preservation recommends resources over 45 years of age be recorded and evaluated for historical resources eligibility (California Office of Historic Preservation 1995:2).

A property is eligible for listing in the CRHR if it meets one of more of the following criteria:

- Criterion 1:** Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage
- Criterion 2:** Is associated with the lives of persons important to our past
- Criterion 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
- Criterion 4:** Has yielded, or may be likely to yield, information important in prehistory or history

2.1.3 California Assembly Bill 52 of 2014

As of July 1, 2015, Assembly Bill (AB) 52 was enacted and expands CEQA by defining a new resource category, “tribal cultural resources”. AB 52 establishes, “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” (PRC Section 21084.2). It further states the CEQA lead

agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

PRC Section 21074 (a)(1)(A) and (B) define tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and that meets at least one of the following criteria, as summarized in CEQA Guidelines Appendix G:

- 1) Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k)
- 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 PRC Section 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process with California Native American tribes that must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to “begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.” California Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

2.2 California Health and Safety Code

Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined if the remains are subject to the Coroner’s authority. If the human remains are of Native American origin, the coroner must notify the NAHC within 24 hours of this identification.

2.3 California Public Resources Code §5097.98

Section 5097.98 of the California Public Resources Code states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code §7050.5, shall immediately notify those persons (i.e., the Most Likely Descendant [MLD]) that it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site.

2.4 Local Regulations

2.4.1 City of Manteca General Plan

Although the City of Manteca does not have a historic preservation ordinance with criteria for local designation, the General Plan, which was adopted in 2023, includes goals and polices relating to

cultural resources (City of Manteca 2023). As presented in the Resource Conservation Element these include:

Section 8.12. Cultural Resources

Goal RC-10. Preserve and enhance Manteca’s archaeological and historic resources for their aesthetic, educational and cultural values; and respect Manteca’s Native American heritage.

Policies

- RC-10.1 Protect, and support efforts of community members and organizations to protect, important historic resources and use these resources to promote a sense of place and history in Manteca.
- RC-10.2 Encourage historic resources to remain in their original use whenever possible. The adaptive use of historic resources is preferred, particularly as museums, educational facilities, or visitor-serving uses, when the original use can no longer be sustained. Older residences may be converted to office/retail use in commercial areas and to tourist or business use, so long as their historical authenticity is maintained or enhanced.
- RC-10.3 Do not approve any public or private project that may adversely affect an archaeological site without consulting the California Archaeological Inventory at Stanislaus State University, conducting a site evaluation as may be indicated, and attempting to mitigate any adverse impacts according to the recommendation of a qualified archaeologist. City implementation of this policy shall be guided by CEQA and the National Historic Preservation Act.
- RC-10.4 Require that the proponent of any development proposal in an area with potential archaeological resources, and specifically near the San Joaquin River and Walthall Slough, and on the east side of State Hwy 99 at the Louise Avenue crossing, shall consult with the California Archaeological Inventory, Stanislaus State University to determine the potential for discovery of cultural resources, conduct a site evaluation as may be indicated, and mitigate any adverse impacts according to the recommendation of a qualified archaeologist. The survey and mitigation shall be developer funded.
- RC-10.5 Work with property owners seeking registration of historical structures as Historic Landmarks or listing on the Register of Historic Sites.
- RC-10. Encourage the voluntary identification, conservation, and reuse of historical structures, properties, and sites with special and recognized historic, architectural, or aesthetic value.
- RC-10.6 Support the efforts of property owners to preserve and renovate historic and architecturally significant structures. Where such buildings cannot be preserved intact, the City shall seek to preserve the building facades.
- RC-10.7 Support and promote annual festivals and community events that celebrate Manteca’s cultural heritage.
- RC-10.8 Encourage and support community art projects, including murals, sculptures, educational programs, and events that highlight Manteca’s cultural and historic heritage.
- RC-10.9 Review new development projects and work in conjunction with the California Historical Resources Information System to determine whether project areas contain known archaeological resources, either prehistoric and/or historic-era, or have the potential for such resources.

RC-10.10 Ensure that human remains are treated with sensitivity and dignity, and ensure compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98.

RC-10.11 Consistent with State, local, and tribal intergovernmental consultation requirements such as SB 18, consult as necessary with Native American tribes that may be interested in proposed new development and land use policy changes.

Implementation

RC-10a: Require a records search for any proposed development project, to determine whether the site contains known archaeological, historic, cultural, or paleontological resources and/or to determine the potential for discovery of additional cultural or paleontological resources. This requirement may be waived if determined by the City that the proposed project area is already sufficiently surveyed.

RC-10b: Require a cultural and archaeological survey prior to approval of any project which would require excavation in an area that is sensitive for cultural or archaeological resources and require a paleontological survey in an area that is sensitive for paleontological resources. If significant cultural, archaeological, or paleontological resources, including historic and prehistoric resources, are identified, appropriate measures shall be implemented, such as documentation and conservation, to reduce adverse impacts to the resource.

RC-10c Require all City permits for reconstruction or modification of existing buildings to include the submittal of a photograph of the existing structure or site. The intent is to create a record of the buildings in the City over time. A photograph will also be required for vacant sites that will be modified with new construction of new buildings or other above ground improvements.

RC-10d Incorporate significant archaeological sites, where feasible, into open space areas.

RC-10e Continue to inventory historic sites throughout the City. The inventory should contain a narrative of the significant facts regarding the historic events or persons associated with the site, and pictures of the site.

RC-10f Continue to support the local historical society in their efforts to:

- Archive historic information, including photographs, publications, oral histories and other materials, and
- make the information available to the public for viewing and research.

RC-10g Encourage the placement of monuments or plaques that recognize and celebrate historic sites, structures, and events.

RC-10h Adopt and implement a historical preservation ordinance.

RC-10i Adopt and implement a historic building code, as authorized by state law.

RC-10j Require all new development, infrastructure, and other ground disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:

- If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the Development Services Director shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for recommended protection and preservation measures; and work may only

resume when recommended protections are in place and have been approved by the Development Services Director;

- If construction or grading activities result in the discovery of significant tribal cultural resources, all work within 100 feet of the discovery shall cease, the Development Services Director shall be notified, the resources shall be examined by a qualified archaeologist and Native American tribes on the City's SB 18 and AB 52 list for recommended protection and preservation measures and work may only resume when recommended protections are in place and have been approved by the Development Services Director; and
- If human remains are discovered during any ground disturbing activity, work shall stop until the Development Services Director and the San Joaquin County Coroner have been contacted; if the human remains are determined to be of Native American origin, the Native American Heritage Commission and the most likely descendants have been consulted; and work may only resume when measures to relocate or preserve the remains in place, based on the above consultation, have been taken and approved by the Development Services Director.

RC-10k Collaborate with the Chamber of Commerce and other interested community groups to support and promote community festivals and events.

3 Natural and Cultural Setting

This section provides background information pertaining to the natural and cultural context of the project site. It places the project site within the broader natural environment which has sustained populations throughout history. This section also provides an overview of regional indigenous history, local ethnography, and post-contact history. This background information describes the distribution and type of cultural resources documented within the vicinity of the project site to inform the cultural resources sensitivity assessment and the context within which the project site has been evaluated.

3.1 Natural Setting

The project site lies in San Joaquin County at an approximate elevation of 28 feet (8.5 meters) above mean sea level. Prior to tilling and surrounding development, the project site and vicinity likely consisted of a mixture of grasslands and wetlands typical to California's central valley. The project site is located approximately 4,400 meters east of the modern-day locations of the San Joaquin River and Oakwood Lake. The project site is 2.7 miles (3,218 meters) east of the San Joaquin River and the Stanislaus River is approximately 6.6 miles (10,621 meters) south with various unnamed streams and sloughs around the project site to the north, south, and east (NETR Online 2023). These waterways provided essential habitat for fish and wildlife and contributed to the region's fertile soils. San Joaquin County was home to a diverse range of wildlife, including Tule elk, deer, waterfowl, salmon, and other native species. The region's rivers and wetlands were critical for the spawning and migration of salmon and other fish. None of the surrounding area retains its natural setting, with the project site located in a residential and commercial area characterized by a mix of single-family homes, apartment complexes, and a shopping center, as well as Hwy 120. The property has been previously graded and tilled but remains largely undeveloped except for a modern water conveyance feature extending along the northern boundary of the project site. Vegetation within the vicinity of the site consists of annual grasses, ornamental trees, and low ground cover, consistent with urban environmental settings.

3.2 Cultural Setting

3.2.1 Indigenous History

Prehistoric Setting

The Central Valley has been described as one of the largest intermontane basins in California extending 650 kilometers from the Siskiyou Mountains to the Tehachapis (Rosenthal et al. 2007). No single chronological framework covers the entirety of the Central Valley, but California prehistory is generally divided into three broad time periods: the Paleoindian period (ca. 11,550-8550 BCE), the Archaic Period (8550 BCE-CE 1100) and the Emergent Occupation (CE 1000- European Contact) (Fredrickson 1973, 1974) which has been updated and adjusted by Rosenthal et al. (2007) to further separate the Archaic Period into Lower (8550 BCE to 5550 BCE), Middle (5550 BCE to 550 BCE), and Upper (550 BCE to CE 1100). The prehistoric chronological sequence for the Central Valley presented below is based on Rosenthal et al. (2007) and Moratto (1984).

Paleoindian Period (11,550-8550 BCE)

Little is currently known about the Paleoindian period in the Central Valley. Geoarchaeological studies have demonstrated that erosion and deposition have buried or destroyed early archaeological deposits. This period is primarily represented by isolated finds, and currently, the earliest accepted date of human occupation in the Central Valley ranges from 11,550 to 9550 BCE and comes from fluted projectile points similar to Clovis points found at prehistoric sites near Tracy Lake (San Joaquin County) and the Tulare Lake Basin (Fresno, Kings, Kern, and Tulare counties). Along with fluted projectile points, concave base points have been identified along the Tulare Lake shoreline which was occupied during the Late Pleistocene (5.3 million years ago to 11,700 BCE) (Rosenthal et al. 2007).

Lower Archaic (8550-5550 BCE)

Climate change at the end of the Pleistocene caused significant periods of alluvial deposition beginning around 9050 BCE. These new alluvial deposits created a clear stratigraphic boundary between the Late Pleistocene and Holocene sediments. The Lower Archaic, like the Paleoindian Period, is represented mainly by limited isolated finds. However, one Lower Archaic site (CA-KER-116) has been identified in the Central Valley proper and few in the foothills surrounding the valley (Rosenthal et al. 2007).

Typical Lower Archaic artifacts include flaked stone crescents and stemmed points. The identification of projectile points and a diverse faunal assemblage at CA-KER-116 indicate hunting was an important subsistence activity. However, milling tools and plant remains are largely absent in the valley, thus plant use during the Lower Archaic remains unclear. Several foothill sites contain milling implements and evidence of the use of nut crops such as acorn and pine (LaJeunesse and Pryor 1996). The relationship between foothill and valley floor adaptations is largely unknown during the Lower Archaic; however, it is suggested that the foothill sites may have been seasonally used during this time. More distinct adaptations are apparent in the Middle Archaic, and it is possible that these divergent traditions first emerged in the Lower Archaic (Rosenthal et al. 2007).

Middle Archaic (5550-550 BCE)

The Middle Archaic began with substantial climate change to much warmer, drier conditions. Tulare Lake shrank and eventually disappeared. With this came new wetlands which created new habitats, and rising sea levels led to the creation of the Sacramento-San Joaquin Delta, creating new deposits. Fans and floodplains stabilized after an initial period of deposition in 5550 BCE. Archaeological deposits dating to the Middle Archaic are rare in the Central Valley proper due to these geomorphic changes. The Middle Archaic archaeological record has identified a pattern of organized subsistence strategies and increased residential stability. The archetypal pattern of the Middle Archaic has been identified as the Windmill Pattern. This pattern is represented by extended burials oriented to the west and a sophisticated material culture (Rosenthal et al. 2007). Middle Archaic sites are relatively common in the foothills surrounding the Central Valley and show relatively little change from the Lower Archaic (McGuire 1995).

During this time, the mortar and pestle became more widespread suggesting a shift toward more intensive subsistence practices and higher reliance on the acorn. Fishing technologies, such as bone gorges, hooks, and spears, also appear during the Middle Archaic suggesting a new focus on fishing, especially in the Marsh Creek area. Several other technologies become apparent during this time. Baked-clay impressions of twined basketry, simple pottery, and other baked clay objects have been found at several sites. Personal adornment items also become more frequent. Exchange with

outside groups is evidenced by the presence of obsidian, shell beads and ornaments (Rosenthal et al. 2007; Moratto 1984; Burns et al. 2016). Trade also seemed to be focused on utilitarian items such as obsidian or finished obsidian tools from at least five separate sources (Moratto 1984).

Upper Archaic (550 BCE – CE 1100)

The Upper Archaic began with the onset of the Late Holocene, marked by a cooler, wetter climate. The environmental conditions of the Upper Archaic were characterized by the return of lakes that had disappeared during the Middle Archaic and a renewed fan and floodplain deposition. The Upper Archaic is better represented in the archaeological record than earlier periods. Cultural diversity was more pronounced and is marked by contrasting material cultures throughout the valley (Rosenthal et al. 2007).

During this period, numerous specialized technologies were developed such as bone tools, and implements, *Olivella* and *Haliotis* beads and ornaments, ceremonial blades, and ground-stone plummets. People living in the San Joaquin Valley region traded with neighboring groups for obsidian.

Upper Archaic period economies varied by region throughout the Central Valley. Economies were primarily focused on seasonal resources such as acorns, salmon, shellfish, rabbits, and deer (Rosenthal et al. 2007).

Emergent Occupation (CE 1000- Historic)

The stable climatic conditions of the Upper Archaic continued into the Emergent Period. There has been sporadic research in the San Joaquin Valley on this time period, and thus only the Pacheco Complex lithics on the western edge of the valley has been formally defined. After CE 1000, many of the technologies used during the Archaic disappeared to be replaced by cultural traditions used during European contact. During the Emergent Period, the bow and arrow replaced the atlatl as the preferred hunting method sometime between CE 1000 and 1300.

Increased social complexity is evidenced by increased variation in burial types and burial items and larger residential communities. Burial items such as shell beads, ornaments, and ritually “killed” mortars and pestles are often found in burials. Pottery was frequently obtained through trade with groups living in the foothills to the east. The Panoche side-notched point became important in the western side of the San Joaquin Valley (Rosenthal et al. 2007). In addition to the side-notched point, the Panoche Complex featured large circular structures, flexed burials, marine shell beads, bone awls, millstones, and mortars and pestles (Moratto 1984).

As with the Archaic Period, Emergent Period economies varied geographically, and as seen through the archaeological record, fishing and plant harvesting increased in importance. Most Emergent residential sites contain diverse assemblages of mammal and bird remains and large amounts of fish bone. One thousand years ago the mortar and pestle become the dominant tool type and small seeds increase in archaeological deposits over time (Rosenthal et al. 2007).

3.2.2 Ethnographic Setting

The project site is located within the ancestral territory of the Penutian-speaking Yokuts, which includes the San Joaquin Valley (Kroeber 1925; Wallace 1978). The Yokuts are traditionally divided into three geographical divisions: Northern Valley, Southern Valley, and Foothill Yokuts, primarily distinguished by their dialects (Mithun 2001).

Over the course of their rich history, the Yokuts established permanent village settlements of varying sizes. These settlements featured different types of structures, including single-family dwellings and larger communal residences accommodating 10 families or more. Villages often included mat-covered granaries and sweathouses (Mithun 2001; Sutton et al. 2016).

Traditionally Yokuts organized themselves into self-governing local groups, each comprising several villages. Each group had a chief who oversaw ceremonies, resolved disputes, administered punishment, hosted visitors, and provided assistance to the less fortunate. In some instances, settlements had two chiefs, one representing each moiety (social or ritual group individuals are divided into). Other significant political positions included the chief's messenger and the spokesman (Wallace 1978). Shamans remain integral to Yokut village life, often acquiring their powers through dreams or visions. Those who embrace the shamanic path engage in prayer, fasting, and the acquisition of talismans to facilitate their healing and spiritual duties. Shamans are revered for their ability to heal the sick, retaining a pivotal place in the community's spiritual and cultural practices (Wallace 1978).

The traditional Yokuts' subsistence strategy revolved around a mixed economy with an emphasis on fishing, gathering, and hunting small game. Fishermen used tule rafts and various tools such as nets, spears, basket traps, and bows and arrows to catch fish. They also gathered mussels and hunted turtles in lakes, rivers, and streams. Wild seeds and roots constituted a significant portion of their diet, with tule roots and various seeds being processed into flour for mush. Certain plant leaves and stems, like clover and fiddle-neck, were also collected. Acorns, a staple for many California Native Americans, were not abundant in the Yokuts' ethnographic territory, leading to trade with neighboring groups for this essential food item (Kroeber 1925).

Yokuts traditional technology heavily relied on tule, with its stems serving as the raw material for crafting baskets, cradles, boats, housing, and various other items. Manos and metates played a crucial role in food and animal hide processing (Barton et al. 2010; Sutton et al. 2016). Tools like knives, projectile points, and scraping implements were typically fashioned from imported lithic materials, as suitable stones were scarce in the Central Valley. Some specialized tools, such as bead drills, were made from obsidian acquired through trade or from more distant sources (Sutton et al. 2016). Marine shells obtained through trade with coastal groups served as both shell currency and personal adornments, including Olivella beads (Sutton et al. 2016; Wallace 1978).

Determining the precise historical-era Yokut population in the region remains challenging for researchers, yet it was not uncommon for the Yokut tribes to consist of approximately 2,000 members. For thousands of years, the Yokuts stewarded the lands until the California Gold Rush brought settlers that disrupted their ancestral hunting and fishing territories. This upheaval not only displaced them from their lands but also resulted in violence when they resisted the encroachment. Furthermore, they were particularly vulnerable to diseases introduced by European settlers. By 1970, the Yokut population in San Joaquin County had dwindled to a mere 363 individuals. The Yokuts community continues to maintain a presence in the region to this day (Wyatt 2022).

3.2.3 Post-Contact Setting

Post-contact history for the state of California is generally divided into three periods: the Spanish Period (1769 to 1822), Mexican Period (1822 to 1848), and American Period (1848 to present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between

1769 and 1823. Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican-American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769 to 1822)

Spanish explorers made sailing expeditions along the coast of California between the mid-1500s and mid-1700s. Juan Rodriguez Cabrillo in 1542 led the first European expedition to observe what was known by the Spanish as Alta (upper) California. For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003). The Spanish crown laid claim to Alta California based on the surveys conducted by Cabrillo and Vizcaíno (Bancroft 1885; Gumprecht 1999).

By the eighteenth century, Spain developed a three-pronged approach to secure its hold on the territory and counter against other foreign explorers. The Spanish established military forts known as presidios, as well as missions and pueblos (towns) throughout Alta California. The 1769 overland expedition by Captain Gaspár de Portolá marks the beginning of California's historic period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. Portolá established the Presidio of San Diego as the first Spanish settlement in Alta California in 1769.

Construction of missions and associated presidios was a major emphasis during the Spanish Period in California to integrate the Native American population into Christianity and communal enterprise. Incentives were also provided to bring settlers to pueblos or towns; just three pueblos were established during the Spanish Period, only two of which were successful and remain as California cities (San José and Los Angeles).

Spain began making land grants in 1784, typically to retiring soldiers, although the grantees were only permitted to inhabit and work the land. The land titles technically remained property of the Spanish king (Livingston 1914).

Mexican Period (1822 to 1848)

Several factors kept growth within Alta California to a minimum, including the threat of foreign invasion, political dissatisfaction, and unrest among the indigenous population. After more than a decade of intermittent rebellion and warfare, New Spain won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants (Hackel 1997).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated their colonization efforts. The secularization of the missions following Mexico's independence from Spain resulted in the subdivision of former mission lands and establishment of many additional ranchos. Commonly, former soldiers and well-connected Mexican families were the recipients of these land grants, which now included the title to the land.

During the supremacy of the ranchos (1834 to 1848), landowners largely focused on the cattle industry and devoted large tracts to grazing. Cattle hides became a primary Southern California export, providing a commodity to trade for goods from the east and other areas in the United States and Mexico. The number of nonnative inhabitants increased during this period because of the influx of explorers, trappers, and ranchers associated with the land grants. The rising California population

contributed to the introduction and rise of diseases foreign to the Native American population, who had no associated immunities.

American Period (1848 to Present)

The United States went to war with Mexico in 1846. During the first year of the war, John C. Fremont traveled from Monterey to Los Angeles with reinforcements for Commodore Stockton, and evaded Californian soldiers in Santa Barbara's Gaviota Pass by taking the route over the San Marcos grade instead (Kyle 2002). The war ended in 1848 with the Treaty of Guadalupe Hidalgo, ushering California into its American Period.

California officially became a state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as United States territories (Waugh 2003). Horticulture and livestock, based primarily on cattle as the currency and staple of the rancho system, continued to dominate the California economy through 1850s. The discovery of gold in the northern part of the state led to the Gold Rush beginning in 1848, and with the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat and other goods. During the 1850s cattle boom, rancho vaqueros drove large herds from Southern to Northern California to feed that region's burgeoning mining and commercial boom.

A severe drought in the 1860s decimated cattle herds and drastically affected many rancheros' source of income. In addition, property boundaries that were loosely established during the Mexican era led to disputes with new incoming settlers, problems with squatters, and lawsuits. Rancheros often were encumbered by debt and the cost of legal fees to defend their property. As a result, much of the rancho lands were sold or otherwise acquired by Americans. Most of these ranchos were subdivided into agricultural parcels or towns (Dumke 1944).

Local History

The historic context for the City of Manteca was excerpted and slightly modified from the City of Manteca website (City of Manteca 2023):

"Manteca itself is a relatively young town, first settled by a few pioneer farmers in the heart of one of the greatest agricultural areas in the world. A combination of good soil, excellent climate, and clean water has insured its destiny as a prosperous farming center. There was little activity in Manteca that was not related to agriculture until World War II. Changes came slowly through the 1970's, but today Manteca is shedding much of its old image with new high-tech industries. It has become a "bedroom community" for the industrial sites west of the Altamont Pass.

Before the first settlers came, there were few indigenous people living permanently here on what was then known as the "sand plains". As the California Gold Rush subsided, permanent settlers came to the area. On the first large land holdings, the principal productions were grain and cattle. During this period, this valley settlement was called Cowell Station, named after Joshua Cowell, who was later known as the "father of Manteca". Joshua Cowell crossed the plains in 1861 and took up land in what has become the center of town, located on the corner of what is now Yosemite and Main, where the Bank of America and its parking lot now stands. At one time he owned most of Manteca with a claim to 1,000 acres and he rented another 1,000. He had the honor of being the first Mayor when the town was incorporated in 1918.

In 1873, when the Central Pacific Railroad went through this area, the track was laid through the center of the Cowell Farm. At first, the train stopping point was merely a boxcar called Cowell Station. Because there was another Cowell Station south of Tracy named after Wright Cowell, a

brother of Joshua, the railroad and the farmers agreed to a name change. The new name chosen was Monteca. The citizens of the town were justly dismayed when the railroad printed the first tickets and found the name misspelled, “Manteca” (Spanish for “lard”). Many of the towns’ people were unhappy with the error, but it was never corrected.

In 1902, J.J. Overshiner built the first store building which was occupied by a general store and barber shop. The residential area of the city consisted of only a few homes by 1910, with the population at about 100. Shortly after the opening of the first store, the citizens petitioned for a post office.

Cost-effective, reliable irrigation was essential for the development of the area. It was slow in coming but finally in 1909, an election was held to form the South San Joaquin Irrigation District and to authorize a bond issue. The bonds were not issued until 1913. Irrigation water was diverted from the Stanislaus River about 18-miles northeast of Oakdale. The district built all the lateral ditches and prepared to deliver water to every 40-acre tract. That was the town’s real beginning of growth.

East Union Cemetery is one of the oldest landmarks in the entire county. The cemetery dates to 1872 and was incorporated in 1877. Manteca’s first school was built in 1857. The name given was East Union (to distinguish it from Union School in Lathrop). In 1913, the school was destroyed by fire. After many years of discussion, the first local high school classes met in huts in 1920. Previously, many students attended high school in Stockton via train. On January 26, 1923, the new high school building was dedicated, and it remained a city landmark until it met the wrecking ball in 1969.

The Manteca Canning Company was organized in 1914 and was in operation almost continuously until closing in 1964. Spreckels Sugar Company was constructed in 1916. Sadly, the company closed the plant. The first cheese factory was established in 1921 and the Kraft Company opened a plant in 1935 which operated until 1957. Other manufacturing and non-manufacturing companies include Sharpe Army Depot, Libbey Owens Ford, Simplot, Olin Industries, etc.

Manteca Hospital opened an 18-room facility on the corner of Yosemite and Sequoia in 1919. It operated only a few years and is now a homeless shelter. After many years without a hospital, a new 49-bed facility was built on Cottage Avenue in 1962. It has been expanded to 73 beds with complete services. Kaiser opened their hospital in 2005. Kaiser Permanente opened a clinic in 1998 (City of Manteca 2022).

4 Methods

This section presents the methods for each task completed during the preparation of this study.

4.1 Background and Archival Research

4.1.1 Archival Research

Rincon completed background and archival research in support of this study in September 2023. A variety of primary and secondary source materials were consulted. Sources included, but were not limited to, historical maps, aerial photographs, and written histories of the area. The following sources were utilized to develop an understanding of the project site and its context:

- Project plans from Kimley-Horn
- San Joaquin County Assessor's Office Property Records
- Historical aerial photographs and topographic maps accessed via NETR Online
- Historical aerial photographs accessed via University of California, Santa Barbara Library FrameFinder

4.1.2 California Historical Resources Information System Records Search

On August 21, 2023, Rincon received California Historical Resources Information System (CHRIS) records search results from the Central California Information Center (CCaIC) (Appendix A). The CCaIC is the official state repository for cultural resources records and reports for San Joaquin County. The purpose of the records search was to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the project site and a 0.5-mile radius surrounding it. Rincon also reviewed the NRHP, the CRHR, the California Historical Landmarks list, and the Built Environment Resources Directory, as well as its predecessor the California State Historic Property Data File. Additionally, Rincon reviewed the Archaeological Determination of Eligibility list.

4.1.3 Sacred Lands File Search

Rincon contacted the NAHC on August 21, 2023, to request a search of the Sacred Lands File (SLF), as well as a contact list of Native Americans culturally affiliated with the project site. Appendix B provides the results of Rincon's request.

4.2 Field Survey

Rincon Archaeologist Courtney Montgomery, MA, conducted a pedestrian survey of the project site on September 5, 2023. The pedestrian survey was conducted using transect intervals spaced 10 meters and oriented from east to west. Exposed ground surfaces were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock [FAR]), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural

midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historical debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows were also visually inspected. Survey accuracy was maintained using a handheld GPS unit and a georeferenced map of the project site. Site characteristics and survey conditions were documented using field records and a digital camera. Copies of the survey notes and digital photographs are maintained at the Rincon Fresno office.

5 Findings

5.1 Known Cultural Resources Studies

The CHRIS records search and background research identified 19 cultural resources studies within a 0.5-mile of the project site (Appendix A). Of these studies, six include a portion of the project site. Although previous studies identify that the entire project site has been studied, none of the studies covering the project site include a pedestrian survey of the project site. Known studies that are documented within or adjacent to the project site are discussed in further detail below.

5.1.1 Study SJ-01900

Kyle Napton of California State University, Stanislaus Institute for Archaeological Research prepared study SJ-01900, *A Preliminary Cultural Resources Investigation of the South Manteca Area Plan, 7,800 acres in San Joaquin County, California* (1993). The study served as an overview and preliminary assessment of the cultural resources' sensitivity for the proposed South Manteca Area Plan Project (Napton 1993). The study stated the east boundary of the current project site, adjacent to Airport Road, was sensitive for cultural resources but the report does not provide further detail on what types of cultural resources the area is sensitive for. The study utilized a windshield survey approach to the survey by driving the roads closest to the project site. The report does not document how much of the current project site was surveyed using this method.

5.1.2 Study SJ-04786

Prepared by Ric Windmiller in 2002, study SJ-04786 titled *City of Manteca General Plan Update Background Reports: Archaeological Resources, Historical Resources, Records Search Results* provided a general context of the significance of the cultural resources in the City of Manteca (Windmiller 2002). The study did not identify any cultural resources within or adjacent to the subject project site. The study only included background research of the project area and no surveys were conducted.

5.1.3 Study SJ-04982

Study SJ-04982 is an excerpt from the journal *The San Joaquin Historian: Manteca: City in Transition* written by Howard Shideler in 1988. The study provided historical anecdotes as well as background information regarding various built environment and cultural resources in the City of Manteca (Shideler 1988). The study only included background research and did not identify any cultural resources within the current project site. The study did not conduct any survey as part of this study.

5.1.4 Study SJ-05309

In 2004, Applied Earth Works, Inc. prepared Study SJ-05309 titled *Cultural Resources Investigations for the South San Joaquin Irrigation District in San Joaquin County, California*. The study consists of a records search and literature review, background historical research, field survey, documentation of all discovered cultural resources, and an evaluation of those resources identified along routes

proposed for an overhead distribution line installed and managed by the South San Joaquin Irrigation District (Baloian et al. 2004). The records search revealed 10 previously recorded historical cultural resources within the study boundaries. Six of these are buildings; three are linear features; and one is a highway bridge. All 10 resources have been evaluated and have been determined to be ineligible for listing on the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR). The study did not identify any cultural resources within the current project site. Although the study included a field survey of the study area, the current project site was not surveyed during this study.

5.1.5 Study SJ-06625

Prepared by ASI Archaeology and Cultural Resource Management in 1998, study SJ-06625 titled *Cultural Resources Survey South County Surface Water Project San Joaquin County, California* detailed the cultural research conducted for the South San Joaquin Irrigation District's proposed South County Surface Water Supply Project. The project entailed the construction of a water treatment plant and water transmission facilities to deliver treated water to destination cities (ASI Archaeology and Cultural Resource Management 1998). No cultural resources were identified within or adjacent to the current project site. This study utilized a windshield survey approach for the study. Maps and details of the survey area were not included in the report for the study.

5.1.6 Study SJ-09247

In 2017, LSA Associates, Inc. prepared study SJ-09247 titled *Supplemental Archaeological Survey Report: State Route 120 at Union Road Interchange Project* in coordination with the California Department of Transportation (Caltrans). The study included background research, a records search, and a field survey which identified one cultural resource, an abandoned concrete agricultural water basin; however, this resource is not a historical resource for purposes of CEQA and is not within the current project site. The study did not identify any cultural resources within or adjacent to the current project site. Although the study included a field survey, the current project site was not surveyed during this study.

5.2 Known Cultural Resources

The CHRIS records search and background research identified three cultural resources within 0.5-mile of the project site. Resources recorded in the search radius are listed in Table 1 below. No resources are recorded within or adjacent to the project site.

Table 1 Known Cultural Resources

Primary Number	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Relationship to Project Site
P-39-005090	Historic-Period Building	Elliott (Brock) School, first occupied in August 1989	1991 (San Joaquin County Superintendent of Schools, Public Schools of San Joaquin County 1852-1990)	Unevaluated	Outside

Primary Number	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Relationship to Project Site
P-39-005337	Historic-Period Feature	Tesla-Salado-Manteca 115kV Transmission Line, circa 1970	2017 (M. Walker.)	Recommended ineligible for listing in the CRHR and NRHP (2017)	Outside
P-39-005422	Historic-Period Single-Family Property	1083 S Airport Way is a single-story Ranch style residence with attached garage constructed in 1956	2018 (Vallaire)	Recommended ineligible for listing in the CRHR and NRHP (2018)	Outside

5.3 Aerial Imagery and Historical Topographic Maps Review

Rincon completed a review of historical topographic maps and aerial imagery to ascertain the development history of the project site. Historical topographic maps and aerial imagery from 1915 to 1977 depict the area as rural and agricultural land (NETR Online 2023, USGS 2023). A 1957 aerial depicts the project site in an agricultural setting with present day Airport Way and two residential structures to the west of the project boundary (NETR Online 2023). Aerial imagery from 1968 depicts several residential structures to the west of Airport Way (NETR Online 2023). Aerial imagery from 1982 depicts the project site as agricultural land, with the presence of Hwy 120 and an associated onramp visible to the north of the project site (NETR Online 2023). The 1982 aerial photography also depicts a structure and additional features (likely the water conveyance feature identified during the pedestrian survey) and an unpaved road visible within the northwest corner and along the northern boundary of the project site (NETR Online 2023). Since the aerial imagery indicates the water conveyance feature was constructed around approximately 1982, it is therefore, not of age and is not considered further in this report. Aerial imagery from 2005 depicts rapid residential development to the north, east and southwest, including the presence of West Atherton Drive to the south of the project site (NETR Online 2023). The area has remained largely unchanged since 2009 (NETR Online 2023).

5.4 Geomorphological Review

According to published geologic mapping, the project site is underlain by Pleistocene aged alluvial deposits. More specifically, one surficial geologic unit comprises the site: “Qm” which is the Modesto Formation that consists of arkosic alluvium along fans (Wagner et al. 1991). Because of the episodic nature of alluvial sedimentation, the sudden burial of artifacts is possible, and alluvial soils have an increased likelihood of containing buried archaeological deposits (Waters 1992, Borejaza et al. 2014). The Pleistocene alluvial deposits largely pre-date human occupation and are therefore less likely to contain buried archaeological deposits. Archaeological resources present in these locations would most likely be located on or near the surface. Additionally, the project site has been plowed for agricultural use since at least 1957 (NETR Online 2023). The project site is 2.7 miles (3,218 meters) east of the San Joaquin River with various unnamed streams and sloughs around the project site to the north, south, and east (NETR Online 2023). Water sources are known to be conducive to

long term habitation; however, no archaeological resources are identified within or surrounding the project site. Based on the lack of previously recorded archaeological resources, age of sediments, and evidence of surface disturbance, the surface sensitivity for archaeological resources is low.

5.5 Sacred Land File Search

On September 14, 2023, the NAHC responded to Rincon's SLF request, stating that the results of the SLF search were negative. See Appendix B for the NAHC response, including Tribal contacts list(s).

5.6 Survey Results

No cultural resources were identified within the project site. Ground visibility within the project site varied from poor (0 to 5 percent exposure) in most areas to sections of good (90 to 100 percent exposure) visibility. Due to the dense vegetation a small area of the project site (approximately 1.5 acres) could not be surveyed (Figure 3) as visibility was poor and the vegetation created a safety hazard for the surveyor. During the survey, ground visibility varied significantly due to heavily overgrown vegetation, making certain areas particularly challenging to navigate safely Photograph 1 below provides an overview of vegetation within the project site Photograph 2 below shows the inaccessible area due to dense vegetation and surface concerns.

The entire project site had been previously tilled and plowed, however due to inactivity and heavy rains, dense vegetation has overgrown some of the project site. Modern debris is present throughout the survey area; The 1982 water conveyance feature noted during the historical aerial review was located during the survey (Photograph 3 and Photograph 4).

Figure 3 Survey Results



Photograph 1 Overview of Vegetation Within Project Site, Facing South



Photograph 2 Inaccessible Area of the Project Site, View to the West



Photograph 3 Overview of Water Conveyance Feature, View to the North



Photograph 4 Overview of Water Conveyance Feature, View to the North



6 Impacts Analysis and Conclusions

The impact analysis included here is organized based on the cultural resources thresholds included in CEQA Guidelines Appendix G: Environmental Checklist Form:

- a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?
- b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?
- c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Threshold A broadly refers to historical resources. To more clearly differentiate between archaeological and built environment resources, we have chosen to limit analysis under Threshold A to built environment resources. Archaeological resources, including those that may be considered historical resources pursuant to Section 15064.5 and those that may be considered unique archaeological resources pursuant to Section 21083.2, are considered under Threshold B.

6.1 Historical Built Environment Resources

The field survey and background research did not identify any built environment resources that may be considered historical resources within the project site. The project therefore does not have the potential to impact built environment historical resources and Rincon recommends a finding of ***no impact to historical resources*** pursuant to CEQA.

6.2 Historical and Unique Archaeological Resources

This assessment did not identify any archaeological resources or archaeological deposits within the project site. The absence of substantial prehistoric or historic-period archaeological resources within the immediate vicinity, along with the existing level of disturbance in the project site, suggests there is a low potential for encountering intact subsurface archaeological deposits. However, the lack of surface evidence of archaeological materials does not preclude their subsurface existence, and as such, Rincon presents the following recommended mitigation measure for unanticipated discoveries during construction. With adherence to this measure, Rincon recommends a finding of ***less-than-significant impact with mitigation for archaeological resources*** under CEQA.

6.2.1 Recommended Mitigation

Unanticipated Discovery of Cultural Resources

In the event that archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the resource. If the resource is determined by the qualified archaeologist to be prehistoric, then a Native American representative shall also be contacted to participate in the evaluation of the resource. If the qualified archaeologist and/or

Native American representative determines it to be appropriate, archaeological testing for CRHR eligibility shall be completed. If the resource proves to be eligible for the CRHR and significant impacts to the resource cannot be avoided via project redesign, a qualified archaeologist shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of the California Code of Regulations (CCR) Guidelines Section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the qualified archaeologist and Native American representative, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The City shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the California Historical Resources Information System, per CCR Guidelines Section 15126.4(b)(3)(C).

6.3 Human Remains

No human remains are known to be present within the project site. However, the discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be of Native American origin, the Coroner will notify the Native American Heritage Commission, which will determine and notify the MLD. The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from subsequent disturbance. With adherence to existing regulations, Rincon recommends a finding of *less-than-significant impact to human remains* under CEQA.

7 References

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- 2011 "California Register and National Register: A Comparison (for purposes of determining eligibility for the California Register)," *California Office of Historic Preservation Technical Assistance Series #6*. Department of Parks and Recreation, Sacramento, California

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Appendix A

California Historical Resources Information System Records Search Results

CHRIS Data Request Form

ACCESS AND USE AGREEMENT NO.: 56.00 IC FILE NO.: _____

To: Central California Information Center

Print Name: Rachel Bilchak Date: 08/17/2023

Affiliation: Rincon Consultants, Inc.

Address: 180 N. Ashwood Avenue

City: Ventura State: CA Zip: 93003

Phone: (805) 644-4455 Fax: (805) 644-4455 Email: rbilchak@rinconconsultants.com

Billing Address (if different than above): _____

Billing Email: ap@rinconconsultants.com Billing Phone: (805) 644-4455

Project Name / Reference: Manteca Woodsprings Suites (23-14491)

Project Street Address: N/A

County or Counties: San Joaquin County

Township/Range/UTMs: T02S R06E S01,12; T02S R07E S06-07

USGS 7.5' Quad(s): Lathrop,Manteca Quadrangle.

PRIORITY RESPONSE (Additional Fee): yes / no

TOTAL FEE NOT TO EXCEED: \$ 800.00

(If blank, the Information Center will contact you if the fee is expected to exceed \$1,000.00)

Special Instructions:

Records search request for the area with a 0.5 mile buffer.

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 <u>0.5</u> mi. radius
ARCHAEOLOGICAL Resource Locations¹	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
NON-ARCHAEOLOGICAL Resource Locations	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Report Locations¹	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
"Other" Report Locations²	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>

3. Database Information:

(contact the IC for product examples, or visit the [SSJVIC website](#) for examples)

	Within project area	Within <u>0.5</u> mi. radius
ARCHAEOLOGICAL Resource Database¹		
List (PDF format)	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Detail (PDF format)	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Excel Spreadsheet	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
NON-ARCHAEOLOGICAL Resource Database		
List (PDF format)	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Detail (PDF format)	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Excel Spreadsheet	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Report Database¹		
List (PDF format)	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Detail (PDF format)	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Excel Spreadsheet	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Include "Other" Reports ²	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>

4. Document PDFs (paper copy only upon request):

	Within project area	Within <u>0.5</u> mi. radius
ARCHAEOLOGICAL Resource Records ¹	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
NON-ARCHAEOLOGICAL Resource Records	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
Reports ¹	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>
"Other" Reports ²	yes <input type="checkbox"/> / no <input type="checkbox"/>	yes <input type="checkbox"/> / no <input type="checkbox"/>

CHRIS Data Request Form

5. Eligibility Listings and Documentation:

Within project area Within 0.5 mi. radius

OHP Built Environment Resources Directory³:

Directory listing only (Excel format)
Associated documentation⁴

yes / no
yes / no

yes / no
yes / no

OHP Archaeological Resources Directory^{1,5}:

Directory listing only (Excel format)
Associated documentation⁴

yes / no
yes / no

yes / no
yes / no

California Inventory of Historic Resources (1976):

Directory listing only (PDF format)
Associated documentation⁴

yes / no
yes / no

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 <input type="checkbox"/> / no <input type="checkbox"/>
Ethnographic Information	yes <input type="checkbox"/> / no <input type="checkbox"/>
Historical Literature	yes <input type="checkbox"/> / no <input type="checkbox"/>
Historical Maps	yes <input type="checkbox"/> / no <input type="checkbox"/>
Local Inventories	yes <input type="checkbox"/> / no <input type="checkbox"/>
GLO and/or Rancho Plat Maps	yes <input type="checkbox"/> / no <input type="checkbox"/>
Shipwreck Inventory	yes <input type="checkbox"/> / no <input type="checkbox"/>
Soil Survey Maps	yes <input type="checkbox"/> / no <input type="checkbox"/>

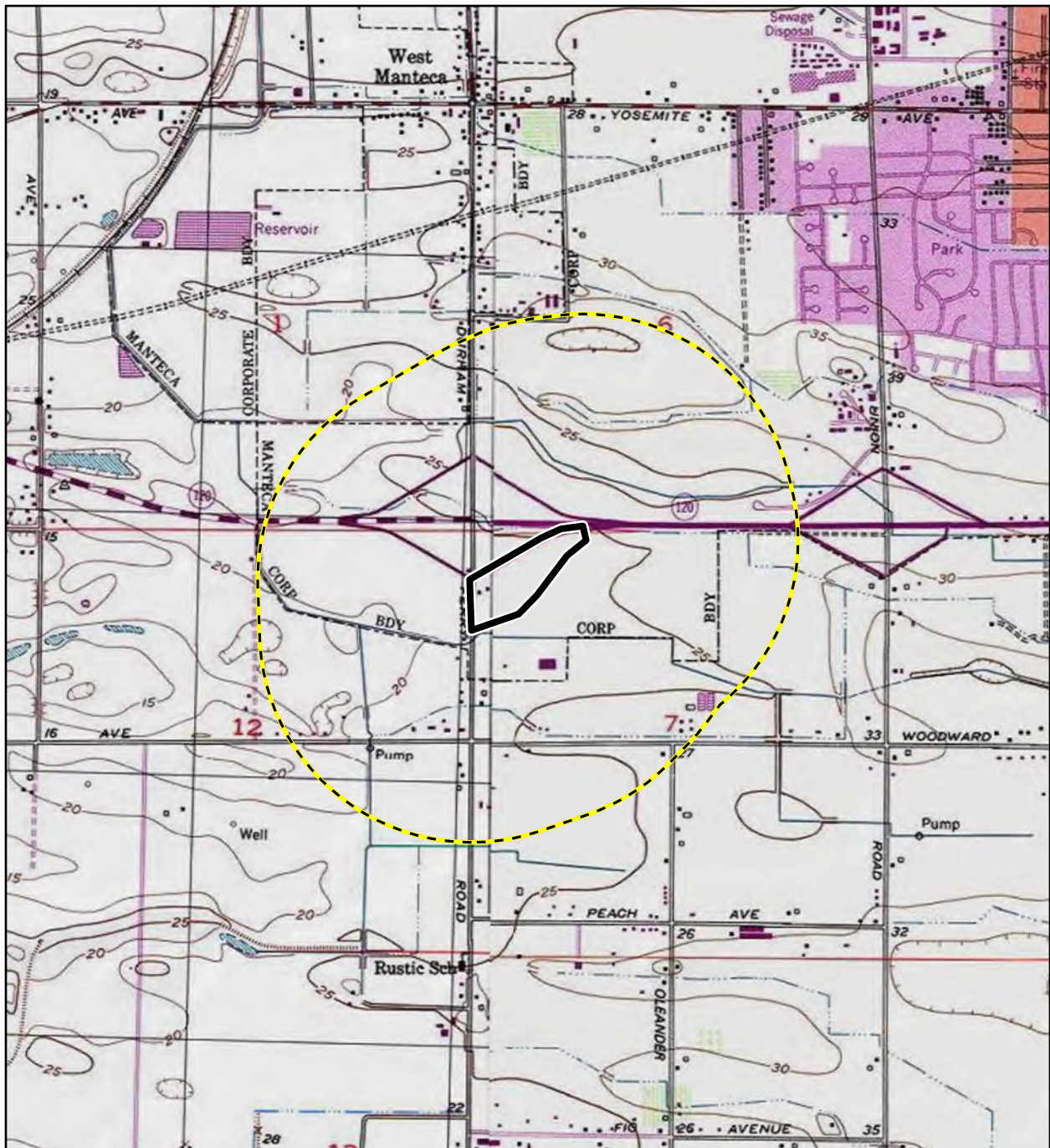
¹ In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under 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.



Imagery provided by National Geographic Society, Esri and its licensors © 2023. Lathrop, Manteca Quadrangle, T02S R06E S01,12; T02S R07E S06-07. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

-  Half-Mile Buffer
-  Area of Potential Effects



0 1,000 2,000 Feet

0 250 500 Meters

1:24,000

Records Search Map





CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System
Department of Anthropology – California State University, Stanislaus
One University Circle, Turlock, California 95382
(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus & Tuolumne Counties

Date: 8/21/2023

Records Search File No.: 12632L
Project: Manteca Woodsprings Suites
(23-14491)

Rachel Bilchak Invoice to: ap@rinconconsultants.com
Rincon Consultants, Inc.
180 N. Ashwood Avenue
Ventura, CA 93003
805-644-4455 rbilchak@rinconconsultants.com

Dear Ms. Bilchak:

The Central California Information Center received your record search request for the project area/radius referenced above, located on the Lathrop and Manteca 7.5' quadrangles in San Joaquin County. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCalC, the locations of resources/reports are provided in the following format: custom GIS maps GIS Data/shape files

Summary Data:

Resources within the project area:	None formally reported to the Information Center.
Resources within the 1/2-mile radius:	3: P-39-005090, 5337, 5422
Reports within the project area:	6: SJ-01900, 4786, 4982, 5309, 6625, 9247
Reports within the 1/2-mile radius:	13: SJ-00729, 4896, 4901, 6322, 6925, 7769, 7770, 7884, 7886, 7887, 7888, 8362, 9252

- 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 Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD)
Dated 9/23/2022

Not all resources listed in the BERD are mapped in GIS, nor do we have records on file for; if you identify additional resources in the BERD that you need copies of, contact the IC.

enclosed not requested nothing listed

Archaeological Resource Directory (ARD excerpt): enclosed not requested nothing listed

CA Inventory of Historic Resources (1976): enclosed not requested nothing listed

Caltrans Bridge Survey: enclosed not requested nothing listed

Ethnographic Information: enclosed not requested nothing listed

Historical Literature: enclosed not requested nothing listed

Historical Maps: enclosed not requested nothing listed

Local Inventories: enclosed not requested nothing listed

GLO and/or Rancho Plat Maps: enclosed not requested nothing listed

Shipwreck Inventory: not available at CCIC; please go to

http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: not available at CCIC; please go to

<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. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Note: Billing will be transmitted separately via email by our Financial Services office* (\$469.05), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice from Financial Services so that you can reference the CMP # (Invoice Number), and then contact the link below:

<https://commerce.cashnet.com/ANTHROPOLOGY>

Sincerely,

E. A. Greathouse

E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: ARBilling@csustan.edu, CSU Stanislaus Financial Services

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-00729	NADB-R - 1361539	1981	Chavez, D.	Cultural Resource Evaluation for the Manteca Wastewater Project, San Joaquin County, California	David Chavez, Consulting Archaeologist; for James M. Montgomery Consulting Engineers, Inc.	
SJ-01900	NADB-R - 1360590	1993	Napton, L. K.	A Preliminary Cultural Resources Investigation of the South Manteca Area Plan, 7,800 acres in San Joaquin County, California.	CSU Stanislaus, Institute for Archaeological Research for WPM Planning Team	39-000282
SJ-04786	NADB-R - 1364725	2002	Windmiller, Ric and Donald Napoli	City of Manteca--General Plan Update, Background Reports: Archaeological Resources, Historical Resources, Records Search Results	Ric Windmiller, Consulting Archaeologist (and) Donald Napoli, of Historic Preservation Planning; for Wade Associates, Sacramento, CA	39-000002, 39-000015, 39-000098, 39-000099, 39-000102, 39-000103, 39-000111, 39-000282, 39-000354, 39-000681, 39-000682, 39-000683, 39-000684, 39-004148, 39-004188, 39-004189, 39-004190, 39-004191, 39-004192
SJ-04896	NADB-R - 1364809	2003	Windmiller, R. and D. Napoli	Airport Way-Yosemite Avenue Specific Plan, Background Reports: Archaeological Resources, Historical Resources, Records Search Results.	R. Windmiller	
SJ-04896A		2003	Napoli, D.	Airport Way-Yosemite Avenue Specific Plan; Background Report on Historical Resources	Historic Preservation Planning	
SJ-04896B		2003	Windmiller, R.	Airport Way-Yosemite Avenue Specific Plan; Appendix: Records Search Results Archaeological and Historic Resources	Consulting Archaeologist	
SJ-04901	NADB-R - 1364814	2003	Windmiller, R. and D. Napoli	Southwest Manteca Area Specific Plan, Background Reports: Archaeological Resources, Historical Resources, Records Search Results.	R. Windmiller, Consulting Archaeologist (and) Donald Napoli, Historic Preservation Planning; for Wade Associates	39-005161, 39-005162, 39-005163, 39-005164, 39-005165
SJ-04982	NADB-R - 1364868	1988	Shideler, H.	Manteca: City in Transition.	San Joaquin County Historical Society	
SJ-05309	NADB-R - 1365195	2004	Baloian, M., R. Baloian, and W. Nettles	Cultural Resources Investigations for the South San Joaquin Irrigation District in San Joaquin County, California	Applied Earthworks, Inc.; prepared for Russell Associates, Palo Alto, CA	39-000002, 39-000015, 39-000098, 39-000099, 39-000103, 39-000354, 39-004400, 39-004401, 39-004402, 39-004403, 39-004404, 39-004405, 39-004406, 39-004407, 39-004408, 39-004409, 39-004410, 39-004411, 39-004412, 39-004413, 39-004414, 39-004415, 39-004416, 39-004417

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-06322	NADB-R - 1366547	2006	Jensen, S. M.	Archaeological Inventory Survey, Manteca Annexation Project, c. 60 acres Adjacent to Union Road and S.R. 120, San Joaquin County, California.	Genesis Society for Insite Environmental, Inc.	
SJ-06625	NADB-R - 1367290	1998	ASI Archaeology and Cultural Resource Management	Cultural Resources Survey, South County Surface Water Project, San Joaquin County, California, South San Joaquin Irrigation District	ASI Archaeology and Cultural Resource Management (prepared for Environmental Science Associates, Inc.)	39-000002, 39-000098, 39-000129, 39-000317, 39-000531, 39-000548, 50-000001
SJ-06925	NADB-R - 1367187	2008	Dougherty, J.	Cultural Resources Constraints Study for the Replacement of 6 Poles on the Tesla-Saludo-Manteca High Voltage Transmission Line. Stanislaus and San Joaquin Counties, California.	PAR Environmental Services	
SJ-07769	NADB-R - 1368146	2007	Jones & Stokes	Draft: Cultural Resources Inventory and Evaluation Report for the Machado Development Project, San Joaquin County, California	Jones & Stokes; for City of Manteca Community Development Dept.	
SJ-07770	NADB-R - 1368147	2013	Holman, M. P.	Letter Report: Cultural Resources Study of the Machado Property, 20329 South Airport Parkway, Manteca, San Joaquin County, California, APN 241-320-18.	Holman & Associates; for UPC/LLC	
SJ-07884		2014	Jordan, N.	Historic Property Survey Report for the SR-120/McKinley Avenue Interchange Project, City of Manteca, San Joaquin County, California, 10-SJ-120, P.M. 2.2, EA 10-0H890, Caltrans District 10	LSA Associates, Inc.; for City of Manteca Public Works Dept.	39-005156, 39-005157, 39-005158, 39-005159, 39-005160, 39-005161, 39-005162, 39-005163, 39-005164, 39-005165
SJ-07886		2013	Kaptain, N.	Archaeological Survey Report for the SR-120/McKinley Avenue Interchange Project, City of Manteca, San Joaquin County, California, 10-SJ_120, P.M. 2.2, EA 10-0H890	LSA Associates, Inc.; for Caltrans District 10	39-005156
SJ-07887		2014	Meyer, J., and N. Jordan	Extended Phase I Report, SR-120/McKinley Avenue Interchange Project, San Joaquin County, California, Caltrans District 10 EA #10-0H890	LSA Associates, Inc.; for Caltrans District 10	39-005156

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-07888		2013	Hibma, M.	Historical Resources Evaluation Report for the State Route 120/McKinley Avenue Interchange Project, City of Manteca, San Joaquin County, California, 10-SJ-120, P.M. 2.2, EA 10-0H890, 1012000159, Caltrans District 10, Federal Project No. CML (5089(016))	LSA Associates, Inc.; for Caltrans District 10	39-005157, 39-005158, 39-005159, 39-005160, 39-005161, 39-005162, 39-005163, 39-005164, 39-005165
SJ-08362		2014	Peak, M., Gerry, R., and Lawson, M.	Cultural Resource Assessment for the Manteca Family Entertainment Zone, City of Manteca, San Joaquin County, California.	Peak & Associates, Inc. for De Nido Planning Group	39-000098, 39-000103
SJ-09247		2017	Falke, M. and K. Vallaire	Supplemental Archaeological Survey Report, State Route 120 at Union Road Interchange Project, Manteca, San Joaquin County, California; 10-SJ-120, P.M. 3.4/5.2, EA 10-0P200, ID 10-0000-0182	LSA Associates, Inc. for Caltrans	
SJ-09252		2018	Vallaire, K., Sanchez, R., and Falke, M.	Cultural Resources Study, Airport Way Widening Project, Manteca, San Joaquin County, California	LSA for the City of Manteca	39-005158, 39-005415, 39-005416, 39-005417, 39-005418, 39-005419, 39-005420, 39-005421, 39-005422, 39-005423, 39-005424, 39-005425, 39-005426, 39-005427, 39-005428, 39-005429, 39-005430, 39-005431, 39-005432, 39-005433

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-39-005090		Resource Name - Elliott (Brock) School, 1110 Stonum Ln., Manteca	Building	Historic	HP15	1991 (San Joaquin County Superintendent of Schools, Public Schools of San Joaquin County 1852-1990 (1991))	
P-39-005337		Resource Name - Tesla-Salado-Manteca 115 kV Transmission Line	Structure	Historic	HP11	2017 (M. Walker, Cardno, Inc., for PG&E)	SJ-09022
P-39-005422		Resource Name - 1083 S. Airport Way	Building	Historic	HP02	2018 (Vallaire, LSA)	SJ-09252

Appendix B

Native American Heritage Commission Sacred Lands File Search Results

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: Manteca Woodsprings Suites (23-14491)

County: San Joaquin County

USGS Quadrangle Name: Lathrop, Manteca Quadrangle

Township: 02S Range: 06E, 07E Section(s): 01, 06-07, 12

Company/Firm/Agency: Rincon Consultants Inc.

Street Address: 8825 Aero Drive, Suite 120

City: San Diego Zip: 92123

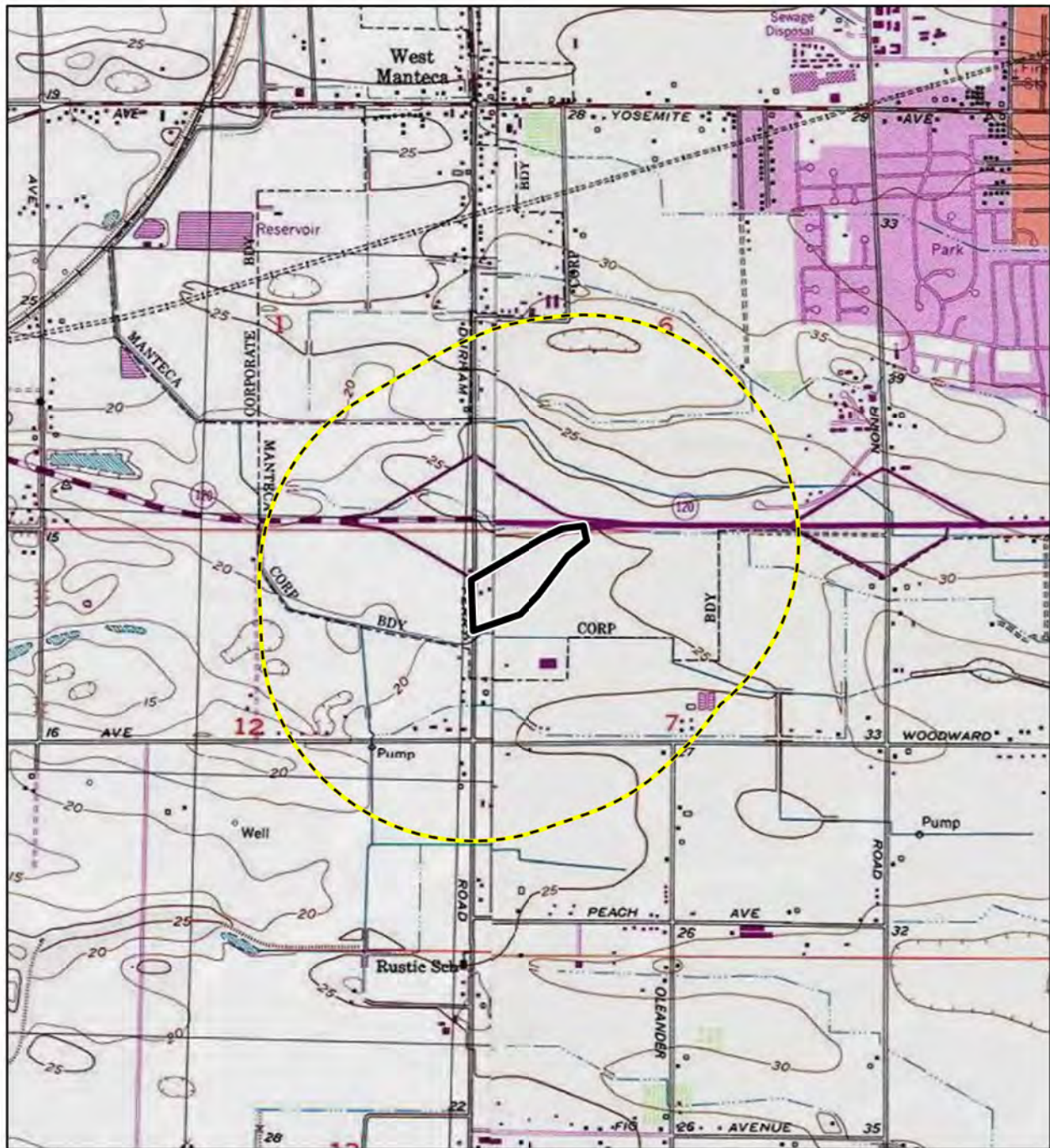
Phone: 408-396-7264

Fax: N/A



Email: rbilchak@rinconconsultants.com

Project Description:

The proposed project involves the development of an approximately 18-acre parcel located to the northeast of the intersection of Airport Way and West Atherton Drive.



Imagery provided by National Geographic Society, Esri and its licensors © 2023. Lathrop, Manteca Quadrangle. T02S R06E S01,12; T02S R07E S06-07. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

-  Half-Mile Buffer
-  Area of Potential Effects



0 1,000 2,000 Feet

0 250 500 Meters

1:24,000

Records Search Map



NATIVE AMERICAN HERITAGE COMMISSION

September 14, 2023

Rachel Bilchak
Rincon ConsultantsVia Email to: rbilchak!@rinconconsultants.com

Re: Manteca Woodsprings Suites (23-14491) Project, San Joaquin County

Dear Ms. Bilchak:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@nahc.ca.gov.

Sincerely,

*Pricilla Torres-Fuentes*Pricilla Torres-Fuentes
Cultural Resources Analyst

Attachment

CHAIRPERSON
Reginald Pagaling
ChumashVICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki,
NomlakiSECRETARY
Sara Dutschke
MiwokPARLIAMENTARIAN
Wayne Nelson
LuiseñoCOMMISSIONER
Isaac Bojorquez
Ohlone-CostanoanCOMMISSIONER
Stanley Rodriguez
KumeyaayCOMMISSIONER
Laurena Bolden
SerranoCOMMISSIONER
Reid Milanovich
CahuillaCOMMISSIONER
VacantEXECUTIVE SECRETARY
Raymond C.
Hitchcock
Miwok, NisenanNAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

Native American Heritage Commission
Native American Contact List
San Joaquin County
9/14/2023

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
San Joaquin	Buena Vista Rancheria of Me-Wuk Indians	F	Rhonda Morningstar Pope, Chairperson	1418 20th Street, Suite 200 Sacramento, CA, 95811	(916) 491-0011	(916) 491-0012	rhonda@buenavistatribe.com	Me-Wuk	Amador, Sacramento, San Joaquin	
	California Valley Miwok Tribe	F	.	14807 Avenida Central La Grange, CA, 95329	(209) 931-4567	(209) 931-4333		Miwok	Calaveras, Madera, San Joaquin, Stanislaus	
	California Valley Miwok Tribe	F	AKA Sheep Rancheria of Me-Wuk Indians of CA,	P.O. Box 395 West Point, CA, 95255	(209) 293-4179		lewilson@yahoo.com	Miwok	Calaveras, Madera, San Joaquin, Stanislaus	7/22/2020
	Confederated Villages of Lisjan Nation	N	Corrina Gould, Chairperson	10926 Edes Avenue Oakland, CA, 94603	(510) 575-8408		cvltribe@gmail.com	Bay Miwok Ohlone Delta Yokut	Alameda, Contra Costa, Sacramento, San Joaquin, Santa Clara, Solano, Stanislaus	3/22/2023
	Confederated Villages of Lisjan Nation	N	Deja Gould, Language Program Manager	10926 Edes Ave Oakland, CA, 94603	(510) 575-8408		cvltribe@gmail.com	Bay Miwok Ohlone Delta Yokut	Alameda, Contra Costa, Sacramento, San Joaquin, Santa Clara, Solano, Stanislaus	3/22/2023
	Confederated Villages of Lisjan Nation	N	Cheyenne Gould, Tribal Cultural Resource Manager	10926 Edes Ave Oakland, CA, 94603	(510) 575-8408		cvltribe@gmail.com	Bay Miwok Ohlone Delta Yokut	Alameda, Contra Costa, Sacramento, San Joaquin, Santa Clara, Solano, Stanislaus	3/22/2023
	Ione Band of Miwok Indians	F	Sara Dutschke, Chairperson	9252 Bush Street Plymouth, CA, 95669	(209) 245-5800		consultation@ionemiwok.net	Miwok	Amador, Calaveras, El Dorado, Sacramento, San Joaquin	
	Muwekma Ohlone Indian Tribe of the SF Bay Area	N	Monica Arellano, Vice Chairwoman	20885 Redwood Road, Suite 232 Castro Valley, CA, 94546	(408) 205-9714		monicavarellano@gmail.com	Costanoan	Alameda, Contra Costa, Marin, Merced, Napa, Sacramento, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, Stanislaus	7/12/2019
	North Valley Yokuts Tribe	N	Katherine Perez, Chairperson	P.O. Box 717 Linden, CA, 95236	(209) 887-3415		canutes@verizon.net	Costanoan Northern Valley Yokut	Alameda, Calaveras, Contra Costa, Fresno, Madera, Mariposa, Merced, Sacramento, San Benito, San Joaquin, Santa	
	North Valley Yokuts Tribe	N	Timothy Perez,	P.O. Box 717 Linden, CA, 95236	(209) 662-2788		huskanam@gmail.com	Costanoan Northern Valley Yokut	Alameda, Calaveras, Contra Costa, Fresno, Madera, Mariposa, Merced, Sacramento, San Benito, San Joaquin, Santa	5/12/2020
	Tule River Indian Tribe	F	Kerri Vera, Environmental Department	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	kerri.vera@tulerivertribe-nsn.gov	Yokut	Alameda, Amador, Calaveras, Contra Costa, Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Monterey, Sacramento, San	7/22/2016
	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	
	Tule River Indian Tribe	F	Joey Garfield, Tribal Archaeologist	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	joey.garfield@tulerivertribe-nsn.gov	Yokut	Alameda, Amador, Calaveras, Contra Costa, Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Monterey, Sacramento, San	7/22/2016
	Wilton Rancheria	F	Herbert Griffin, Executive Director of Cultural Preservation	9728 Kent Street Elk Grove, CA, 95624	(916) 683-6000		hgriffin@wiltonrancheria-nsn.gov	Miwok	Alameda, Alpine, Amador, Contra Costa, El Dorado, Mono, Nevada, Placer, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, Yolo, Yuba	8/7/2023

**Native American Heritage Commission
Native American Contact List
San Joaquin County
9/14/2023**

Wilton Rancheria	F	Cultural Preservation Department,	9728 Kent Street Elk Grove, CA, 95624	(916) 683-6000		cpd@wiltonrancheria-nsn.gov	Miwok	Alameda,Alpine,Amador,Contra Costa,El Dorado,Mono,Nevada,Placer,Sacramento,San Joaquin,Solano,Stanislaus,Sutter,Yolo,Yuba	8/7/2023
Wilton Rancheria	F	Dahlton Brown, Executive Director of Administration	9728 Kent Street Elk Grove, CA, 95624	(916) 683-6000		dbrown@wiltonrancheria-nsn.gov	Miwok	Alameda,Alpine,Amador,Contra Costa,El Dorado,Mono,Nevada,Placer,Sacramento,San Joaquin,Solano,Stanislaus,Sutter,Yolo,Yuba	8/7/2023
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,Cataveras,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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Manteca Woodsprings Suites (23-14491) Project, San Joaquin County.

Record: PROJ-2023-004663
Report Type: List of Tribes
Counties: San Joaquin
NAHC Group: All

APPENDIX E
ENERGY CALCULATIONS MODELING DATA

Operational Fuel

Vehicle Type	Percent ¹	Annual VMT ²	MGP ³	Annual Fuel	Fuel Type	County Gallons ⁴	County Percent	Statewide	Statewide percent
Passenger Cars	0.795	12,237,142	21.6	566,534	Gas	272,605,570	0.2078%	15,355,377,116	0.0037%
Light/Medium Trucks	0.180	2,770,674	17.2	161,086	Diesel	97,654,594	0.0344%	3,683,414,417	0.0044%
Heavy Trucks/Other	0.025	384,816	6.1	63,085	Diesel	97,654,594	0.0135%		
Total	1.000	15,392,632		224,170		467,914,758	0.2296%		

Notes:

¹ Percent of vehicle trip distribution based on fleet mix from CalEEMod.

² Total annual operational VMT based on mitigated annual VMT from CalEEMod (5.9.1 Trip Summary Information).

³ Average fuel economy derived from Department of Transportation.

⁴ Total annual county fuel per EMFAC 2021 model of projected operational fuel usage.

Electricity and Natural Gas

	Mitigated Project Annual Energy	County Annual Energy ³	Percentage Increase
Electricity (kWh/yr)	2,430,855	5,608,060,493	0.0433%
Electricity (MWh/yr)	2,431	5,608,060	0.0433%
Electricity (GWh/yr)	2.431	5,608.06	0.0433%
Adjusted Electricity (GWh/yr)	6.247	5,608	0.1114%
Natural Gas (million therms)		186	
Natural Gas (kBTU/yr)	7,015,555	18,632,301,800	0.0377%
Natural Gas (therms)	70,156	186,323,018.00	0.0377%

Land Use	Electricity ¹ (kWh/yr)		Natural Gas ² (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Convenience Market with Gas Pumps	314471	314471	185659	185659.273
Strip mall	505300	505300	500285	500284.8404
Fast Food Restaurant with Drive Thru	558135	558135.363	1693727	1693727.058
Hotel	643317	643316.8643	3354813	3354812.915
Automobile Care Center	319196	319195.6895	1281071	1281070.979
Parking Lot	90436	90435.7872	0	0
Total Energy	2,430,855	2,430,855	7,015,555	7,015,555

Notes:

¹ Electricity use per CalEEMod (5.11 Energy by Land Use).

² Natural Gas use per CalEEMod (5.11 Natural Gas by Land Use).

³ County total energy values from California Energy Commission energy reports available through ecdms.energy.ca.gov.

Operational Water

Mitigated Indoor	149	million gallons
Indoor Energy Intensity Factor ¹	4,737	kWh/MG
Mitigated Outdoor	12	million gallons
Outdoor Energy Intensity Factor ²	3,218	kWh/MG
Operational Water Energy	744310.8217	kWh
Operational Water Energy	744.3108217	MWh
Operational Water Energy	0.744310822	GWh
Percentage Countywide	0.0133%	
Total water use	161	million gallons

Land Use ³	Unmitigated (MG)		Mitigated (MG)	
	Indoor	Outdoor	Indoor	Outdoor
Convenience Market with Gas Pumps	454,805	52,916	454,805	52,916
Strip mall	4,296,206	119,798	4,296,206	119,798
Fast Food Restaurant with Drive Thru	4,219,119	499,852	4,219,119	499,852
Hotel	3,044,012	226,177	3,044,012	226,177
Automobile Care Center	2,907,106	266,306	2,907,106	266,306
Parking Lot	-	-	-	-
Total Operational Water	149	12	149	12

Notes:

¹ Indoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix G, page G-32. Factor includes supply, treatment, distribution, and wastewater.

² Outdoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix G, page G-32. Factor includes supply, treatment, and distribution.

³ Operational water use values per CalEEMod (5.12 Operational Water and Wastewater Consumption).

APPENDIX F
NOISE MEASUREMENT FIELD DATA

Noise Measurement Field Data

Project:	The Crossings Manteca Project	Job Number:	197694001
Site No.:	ST-1	Date:	7/13/2023
Analyst:	Mia Berg and Max Swinderman	Time:	11:11 AM - 11:21 AM
Location:	Along Airport Way on the western side of project site boundary		

Noise Sources: Cars and trucks on Airport Way

Comments:

Results (dBA):	Leq:	Lmin:	Lmax:	Peak:
	64.8	51.7	79.5	103.7

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	83
Wind (mph):	7 mph
Sky:	Clear
Bar. Pressure:	29.96
Humidity:	35%

Photo:





Summary	
File Name on Meter	ST-112.s
File Name on PC	LxTse_0007061-20230531 155535-ST-112.lbin
Serial Number	0007061
Model	SoundExpert* LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2023-05-31 15:55:35
Stop	2023-05-31 16:05:35
Duration	00:10:00.0
Run Time	00:10:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 14:13:59
Post-Calibration	None
Calibration Deviation	---

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	FF-90 2116
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	120.6 dB
	A C Z
Under Range Peak	77.2 74.2 79.2 dB
Under Range Limit	23.8 24.3 29.9 dB
Noise Floor	14.6 15.2 20.7 dB
	First Second Third
Instrument Identification	1100 W. Town&Country Rd, #700 Orange, CA 92868

Results	
LAeq	65.6 dB
LAE	93.4 dB
EA	242.052 µPa²h
LApeak (max)	2023-05-31 16:01:37 96.4 dB
LASmax	2023-05-31 16:01:37 79.6 dB
LASmin	2023-05-31 16:00:14 44.9 dB
SEA	-99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	65.6	65.6	-99.9	65.6	65.6	-99.9

LCeq	75.2 dB
LAeq	65.6 dB
LCeq - LAeq	9.6 dB
LAlaq	67.4 dB
LAeq	65.6 dB
LAlaq - LAeq	1.8 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	65.6		75.2			
LS(max)	79.6	2023/05/31 16:01:37				
LS(min)	44.9	2023/05/31 16:00:14				
LPeak(max)	96.4	2023/05/31 16:01:37				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics	
LA 5.00	73.5 dB
LA 10.00	69.8 dB
LA 33.30	60.2 dB
LA 50.00	57.2 dB
LA 66.60	53.4 dB
LA 90.00	48.3 dB

Calibration History							
Preamp	Date	dB re. 1V/Pa			6.3	8.0	10.0
PRMLxT1L	2023-05-31 14:13:59	-26.86			52.26	58.42	56.87
PRMLxT1L	2023-05-25 09:16:49	-28.72			80.15	73.09	63.35
PRMLxT1L	2023-04-18 14:15:49	-27.27			43.13	53.76	54.84
PRMLxT1L	2023-04-18 10:51:42	-26.69			72.70	75.77	63.17
PRMLxT1L	2023-04-12 14:55:45	-27.88			77.92	79.75	67.81
PRMLxT1L	2023-04-12 10:35:35	-27.58			50.63	47.29	56.55
PRMLxT1L	2023-03-23 11:12:03	-28.64			85.31	79.29	90.61
PRMLxT1L	2023-03-23 09:47:22	-29.16			2.44	1.41	32.70
PRMLxT1L	2023-03-19 06:43:46	-28.55			45.86	53.64	50.36
PRMLxT1L	2023-03-17 08:13:23	-28.49			67.24	63.76	62.84
PRMLxT1L	2023-03-08 09:41:26	-28.48			63.94	68.89	69.29

Noise Measurement Field Data

Project:	The Crossings Manteca Project	Job Number:	197694001	
Site No.:	ST-2	Date:	7/13/2023	
Analyst:	Mia Berg and Max Swinderman	Time:	10:53 AM-11:03 AM	
Location:	2079 Goldeneye Way			
Noise Sources:	Cars on W Atherton Drive and Airport Way			
Comments:				
Results (dBA):				
	Leq:	Lmin:	Lmax:	Peak:
	72.7	54.0	93.4	115.4

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	83
Wind (mph):	6
Sky:	Clear
Bar. Pressure:	29.97
Humidity:	35%

Photo:



Summary
File Name on Meter ST-108.s
File Name on PC LxTse_0007061-20230531 143057-ST-108.ldbin
Serial Number 0007061
Model SoundExpert* LxT
Firmware Version 2.404
User
Location
Job Description
Note

Measurement
Description
Start 2023-05-31 14:30:57
Stop 2023-05-31 14:40:57
Duration 00:10:00.0
Run Time 00:10:00.0
Pause 00:00:00.0

Pre-Calibration 2023-05-31 14:13:59
Post-Calibration None
Calibration Deviation ---

Overall Settings
RMS Weight A Weighting
Peak Weight A Weighting
Detector Slow
Preamplifier PRMLxT1L
Microphone Correction FF-90 2116
Integration Method Linear
OBA Range Normal
OBA Bandwidth 1/1 and 1/3
OBA Frequency Weighting A Weighting
OBA Max Spectrum At LMax
Overload 120.6 dB

Under Range Peak **A** **C** **Z**
Under Range Limit **77.2** 74.2 79.2 dB
Noise Floor **23.8** 24.3 29.9 dB

Noise Floor 14.6 15.2 20.7 dB

Instrument Identification **First** **Second** **Third**
1100 W. Town&Country Rd, #700 Orange, CA 92868

Results
LAeq 60.4 dB
LAE 88.2 dB
EA 73.099 $\mu\text{Pa}^2\text{h}$
LApeak (max) 2023-05-31 14:40:11 96.1 dB
LASmax 2023-05-31 14:31:31 72.7 dB
LASmin 2023-05-31 14:36:33 51.4 dB
SEA -99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise

	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	60.4	60.4	-99.9	60.4	60.4	-99.9

LCeq 68.9 dB
LAeq 60.4 dB
LCeq - LAeq 8.5 dB
LAeq 62.2 dB
LAeq 60.4 dB
LAeq - LAeq 1.8 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	60.4		68.9			
Ls(max)	72.7	2023/05/31 14:31:31				
Ls(min)	51.4	2023/05/31 14:36:33				
Lpeak(max)	96.1	2023/05/31 14:40:11				

Overload Count 0
Overload Duration 0.0 s
OBA Overload Count 0
OBA Overload Duration 0.0 s

Statistics
LA 5.00 67.4 dB
LA 10.00 66.8 dB
LA 33.30 58.8 dB
LA 50.00 56.7 dB
LA 66.60 55.7 dB
LA 90.00 53.9 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0
PRMLxT1L	2023-05-31 14:13:59	-26.86	52.26	58.42	56.87
PRMLxT1L	2023-05-25 09:16:49	-28.72	80.15	73.09	63.35
PRMLxT1L	2023-04-18 14:15:49	-27.27	43.13	53.76	54.84
PRMLxT1L	2023-04-18 10:51:42	-26.69	72.70	75.77	63.17
PRMLxT1L	2023-04-12 14:55:45	-27.88	77.92	79.75	67.81
PRMLxT1L	2023-04-12 10:35:35	-27.58	50.63	47.29	56.55
PRMLxT1L	2023-03-23 11:12:03	-28.64	85.31	79.29	90.61
PRMLxT1L	2023-03-23 09:47:22	-29.16	2.44	1.41	32.70
PRMLxT1L	2023-03-19 06:43:46	-28.55	45.86	53.64	50.36
PRMLxT1L	2023-03-17 08:13:23	-28.49	67.24	63.76	62.84
PRMLxT1L	2023-03-08 09:41:26	-28.48	63.94	68.89	69.29

Noise Measurement Field Data

Project:	The Crossings Manteca Project	Job Number:	197694001
Site No.:	ST-3	Date:	7/13/2023
Analyst:	Mia Berg and Max Swinderman	Time:	10:13 AM - 10:23 AM
Location:	1939 Goldfinch Way		

Noise Sources: Cars and people on W Atherton Drive and Sparrowhawk Street

Comments:

Results (dBA):				
	Leq:	Lmin:	Lmax:	Peak:
	61.7	53.6	73.5	95.2

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	83
Wind (mph):	6
Sky:	Clear
Bar. Pressure:	29.97
Humidity:	35%

Photo:





Summary	
File Name on Meter	ST-109.s
File Name on PC	LxTse_0007061-20230531 144819-ST-109.ldbin
Serial Number	0007061
Model	SoundExpert* LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2023-05-31 14:48:19
Stop	2023-05-31 14:58:19
Duration	00:10:00.0
Run Time	00:10:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 14:13:59
Post-Calibration	None
Calibration Deviation	---

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	FF-90 2116
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	120.6 dB
	A C Z
Under Range Peak	77.2 74.2 79.2 dB
Under Range Limit	23.8 24.3 29.9 dB
Noise Floor	14.6 15.2 20.7 dB
	First Second Third
Instrument Identification	1100 W. Town&Country Rd, #700 Orange, CA 92868

Results	
LAeq	49.2 dB
LAE	77.0 dB
EA	5.545 $\mu\text{Pa}^2\text{h}$
LApk (max)	2023-05-31 14:57:44 81.4 dB
LASmax	2023-05-31 14:57:45 65.4 dB
LASmin	2023-05-31 14:53:06 44.1 dB
SEA	-99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApk > 135.0 dB	0	0.0 s
LApk > 137.0 dB	0	0.0 s
LApk > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	49.2	49.2	-99.9	49.2	49.2	-99.9

LCeq	62.7 dB
LAeq	49.2 dB
LCeq - LAeq	13.5 dB
LAlaq	51.0 dB
LAeq	49.2 dB
LAlaq - LAeq	1.8 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	49.2		62.7			
Ls(max)	65.4	2023/05/31 14:57:45				
Ls(min)	44.1	2023/05/31 14:53:06				
Lpeak(max)	81.4	2023/05/31 14:57:44				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics	
LA 5.00	52.6 dB
LA 10.00	49.9 dB
LA 33.30	48.1 dB
LA 50.00	47.5 dB
LA 66.60	46.9 dB
LA 90.00	45.6 dB

Calibration History						
Preamp	Date	dB re. 1V/Pa		6.3	8.0	10.0
PRMLxT1L	2023-05-31 14:13:59	-26.86		52.26	58.42	56.87
PRMLxT1L	2023-05-25 09:16:49	-28.72		80.15	73.09	63.35
PRMLxT1L	2023-04-18 14:15:49	-27.27		43.13	53.76	54.84
PRMLxT1L	2023-04-18 10:51:42	-26.69		72.70	75.77	63.17
PRMLxT1L	2023-04-12 14:55:45	-27.88		77.92	79.75	67.81
PRMLxT1L	2023-04-12 10:35:35	-27.58		50.63	47.29	56.55
PRMLxT1L	2023-03-23 11:12:03	-28.64		85.31	79.29	90.61
PRMLxT1L	2023-03-23 09:47:22	-29.16		2.44	1.41	32.70
PRMLxT1L	2023-03-19 06:43:46	-28.55		45.86	53.64	50.36
PRMLxT1L	2023-03-17 08:13:23	-28.49		67.24	63.76	62.84
PRMLxT1L	2023-03-08 09:41:26	-28.48		63.94	68.89	69.29

Noise Measurement Field Data

Project:	The Crossings Manteca Project	Job Number:	197694001
Site No.:	ST-4	Date:	7/13/2023
Analyst:	Mia Berg and Max Swinderman	Time:	10:31 AM - 10:41 AM
Location:	1401 Hazelnut Way		
Noise Sources:	Cars and people along W Atherton Drive		
Comments:			
Results (dBA):			
	Leq:	Lmin:	Lmax:
	64.8	57.9	78.7
			Peak:
			106.5

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	81
Wind (mph):	6
Sky:	Clear
Bar. Pressure:	29.97
Humidity:	37%

Photo:



Summary
 File Name on Meter ST-111.s
 File Name on PC LxTse_0007061-20230531 153932-ST-111.ldbin
 Serial Number 0007061
 Model SoundExpert* LxT
 Firmware Version 2.404
 User
 Location
 Job Description
 Note

Measurement
 Description
 Start 2023-05-31 15:39:32
 Stop 2023-05-31 15:49:32
 Duration 00:10:00.0
 Run Time 00:10:00.0
 Pause 00:00:00.0
 Pre-Calibration 2023-05-31 14:13:59
 Post-Calibration None
 Calibration Deviation ---

Overall Settings
 RMS Weight A Weighting
 Peak Weight A Weighting
 Detector Slow
 Preamplifier PRMLxT1L
 Microphone Correction FF-90 2116
 Integration Method Linear
 OBA Range Normal
 OBA Bandwidth 1/1 and 1/3
 OBA Frequency Weighting A Weighting
 OBA Max Spectrum At LMax
 Overload 120.6 dB
 Under Range Peak A 77.2 C 74.2 Z 79.2 dB
 Under Range Limit 23.8 24.3 29.9 dB
 Noise Floor 14.6 15.2 20.7 dB
 Instrument Identification First 1100 W. Town&Country Rd, #700 Second Orange, CA 92868 Third

Results
 LAeq 58.3 dB
 LAE 86.1 dB
 EA 45.072 µPa²h
 LApeak (max) 2023-05-31 15:46:12 94.7 dB
 LASmax 2023-05-31 15:46:12 78.8 dB
 LASmin 2023-05-31 15:48:54 46.3 dB
 SEA -99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise Ldn LDay 07:00-22:00 LNight 22:00-07:00 Lden LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00
 58.3 58.3 -99.9 58.3 58.3 -99.9 -99.9 dB

LCeq 70.3 dB
 LAeq 58.3 dB
 LCeq - LAeq 12.0 dB
 LAleq 61.4 dB
 LAeq 58.3 dB
 LAleq - LAeq 3.1 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	58.3		70.3			
Ls(max)	78.8	2023/05/31 15:46:12				
Ls(min)	46.3	2023/05/31 15:48:54				
Lpeak(max)	94.7	2023/05/31 15:46:12				

Overload Count 0
 Overload Duration 0.0 s
 OBA Overload Count 0
 OBA Overload Duration 0.0 s

Statistics
 LA 5.00 61.9 dB
 LA 10.00 59.9 dB
 LA 33.30 55.6 dB
 LA 50.00 54.0 dB
 LA 66.60 52.6 dB
 LA 90.00 49.7 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0
PRMLxT1L	2023-05-31 14:13:59	-26.86	52.26	58.42	56.87	55.27	61.28
PRMLxT1L	2023-05-25 09:16:49	-28.72	80.15	73.09	63.35	60.80	53.78
PRMLxT1L	2023-04-18 14:15:49	-27.27	43.13	53.76	54.84	56.13	54.02
PRMLxT1L	2023-04-18 10:51:42	-26.69	72.70	75.77	63.17	65.86	69.74
PRMLxT1L	2023-04-12 14:55:45	-27.88	77.92	79.75	67.81	71.56	69.33
PRMLxT1L	2023-04-12 10:35:35	-27.58	50.63	47.29	56.55	55.36	53.00
PRMLxT1L	2023-03-23 11:12:03	-28.64	85.31	79.29	90.61	86.30	70.84
PRMLxT1L	2023-03-23 09:47:22	-29.16	2.44	1.41	32.70	38.97	44.48
PRMLxT1L	2023-03-19 06:43:46	-28.55	45.86	53.64	50.36	48.48	39.74
PRMLxT1L	2023-03-17 08:13:23	-28.49	67.24	63.76	62.84	55.22	65.39
PRMLxT1L	2023-03-08 09:41:26	-28.48	63.94	68.89	69.29	67.88	62.26

Project: **WoodSpring Manteca**

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
Leq to L10 factor		3

	Receptor (Land Use)	Distance (feet)	Shielding	Direction
1	Single-family Residential (Hazelnut)	200	0	SE
2	Single-family Residential (GoldFinch)	355	0	SE
3	Single-family Residential (Goldeneye)	470	0	SE
4	Single-family Residential	540	0	SW
5	Park	500	0	SE
6	F		0	NE
7	G		0	SW

Construction Phase	Equipment Type	No. of Equip.	Acoustical Usage Factor	Reference Noise Level at 50ft per Unit, Lmax	RECEPTOR 1		RECEPTOR 2		RECEPTOR 3		RECEPTOR 4		RECEPTOR 5		RECEPTOR 6		RECEPTOR 7	
					Noise Level at Receptor 1, Lmax	Noise Level at Receptor 1, Leq	Noise Level at Receptor 2, Lmax	Noise Level at Receptor 2, Leq	Noise Level at Receptor 3, Lmax	Noise Level at Receptor 3, Leq	Noise Level at Receptor 4, Lmax	Noise Level at Receptor 4, Leq	Noise Level at Receptor 5, Lmax	Noise Level at Receptor 5, Leq	Noise Level at Receptor 6, Lmax	Noise Level at Receptor 6, Leq	Noise Level at Receptor 7, Lmax	Noise Level at Receptor 7, Leq
Site Preparation	Dozer	3	40%	82	74.4	70.5	69.4	65.5	67.0	63.0	65.8	61.8	66.5	62.5	#NUM!	#NUM!	#NUM!	#NUM!
		4	40%	84	78.0	74.0	73.0	69.0	70.6	66.6	69.4	65.4	70.0	66.0	#NUM!	#NUM!	#NUM!	#NUM!
	Tractor	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Combined LEO					75.6	70.6		68.2		67.0		67.6		#NUM!	#NUM!	#NUM!	#NUM!	
Grading	Excavator	3	40%	81	73.4	69.5	68.4	64.5	66.0	62.0	64.8	60.8	65.5	61.5	#NUM!	#NUM!	#NUM!	#NUM!
		3	40%	85	77.7	73.8	72.7	68.8	70.3	66.3	69.1	65.1	69.8	65.8	#NUM!	#NUM!	#NUM!	#NUM!
	Grader	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Combined LEO				75.1	70.1		67.7		66.5		67.2		#NUM!	#NUM!	#NUM!	#NUM!		
Building Construction	Crane	1	16%	81	68.6	60.6	63.6	55.6	61.1	53.2	59.9	52.0	60.6	52.6	#NUM!	#NUM!	#NUM!	#NUM!
	Man Lift	3	20%	75	67.4	60.4	62.4	55.5	60.0	53.0	58.8	51.8	59.5	52.5	#NUM!	#NUM!	#NUM!	#NUM!
	Generator	1	50%	81	68.6	65.5	63.6	60.6	61.1	58.1	59.9	56.9	60.6	57.6	#NUM!	#NUM!	#NUM!	#NUM!
	Tractor	3	40%	84	76.7	72.8	71.7	67.8	69.3	65.3	68.1	64.1	68.8	64.8	#NUM!	#NUM!	#NUM!	#NUM!
	Welder/Torch	1	40%	74	62.0	58.0	57.0	53.0	54.5	50.6	53.3	49.4	54.0	50.0	#NUM!	#NUM!	#NUM!	#NUM!

			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	USER DEFINED				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	USER DEFINED				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Combined LEQ				74.0	69.0	66.6	65.4	66.1	#NUM!	#NUM!	#NUM!	#NUM!					
Paving																		
	Paver	2	50%	77	68.2	65.2	63.2	60.2	60.7	57.7	59.5	56.5	60.2	57.2	#NUM!	#NUM!	#NUM!	#NUM!
	Pavement Scarafier	2	20%	90	80.5	73.5	75.5	68.5	73.0	66.1	71.8	64.9	72.5	65.5	#NUM!	#NUM!	#NUM!	#NUM!
	Roller	2	20%	80	71.0	64.0	66.0	59.0	63.5	56.6	62.3	55.4	63.0	56.0	#NUM!	#NUM!	#NUM!	#NUM!
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	USER DEFINED				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	USER DEFINED				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Combined LEQ				74.5	69.5	67.1	65.9	66.5	#NUM!	#NUM!	#NUM!	#NUM!					
Architctural Coating																		
	Compressor (air)	1	40%	78	65.7	61.7	60.7	56.7	58.2	54.3	57.0	53.1	57.7	53.7	#NUM!	#NUM!	#NUM!	#NUM!

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name:

Project Number:

Scenario: Existing

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	Ldn at 100 Feet	Distance to Contour			
										70 Ldn	65 Ldn	60 Ldn	55 Ldn	
1	Airport Way	CA-120 EB Ramps to W Atherton Dr	2	21	14,760	40	0	2.0%	1.0%	63.1	-	65	205	647
2		W Atherton Dr to Woodward Ave	2	12	9,760	40	0	2.0%	1.0%	61.3	-	43	135	425
3	W Atherton Dr	Airport Way to Sage Sparrow Ave	4	30	5,100	45	0	2.0%	1.0%	59.8	-	-	96	304
4		Sage Sparrow Ave to Sparrowhawk St	4	25	4,895	45	0	2.0%	1.0%	59.6	-	-	91	289
5		east of Sparrowhawk St	4	25	3,910	35	0	2.0%	1.0%	56.3	-	-	-	133
6							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
7							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

¹ Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name:

Project Number:

Scenario: Existing Plus Project

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	Ldn at 100 Feet	Distance to Contour			
										70 Ldn	65 Ldn	60 Ldn	55 Ldn	
1	Airport Way	CA-120 EB Ramps to W Atherton Dr	2	21	18,970	40	0	2.0%	1.0%	64.2	-	83	263	832
2		W Atherton Dr to Woodward Ave	2	12	10,408	40	0	2.0%	1.0%	61.6	-	45	143	454
3	W Atherton Dr	Airport Way to Sage Sparrow Ave	4	30	9,958	45	0	2.0%	1.0%	62.7	-	59	188	594
4		Sage Sparrow Ave to Sparrowhawk St	4	25	9,882	45	0	2.0%	1.0%	62.7	-	58	185	584
5		east of Sparrowhawk St	4	25	4,882	35	0	2.0%	1.0%	57.2	-	-	-	167
6							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
7							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

¹ Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name:

Project Number:

Scenario: Opening Year

Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Median Lanes	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
							Medium Trucks	Heavy Trucks	CNEL at 100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
2						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
3						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
4						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
5						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
6						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
7						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

¹ Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name:

Project Number:

Scenario: Opening Year Plus Project

Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Median Lanes	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
							Medium Trucks	Heavy Trucks	CNEL at 100 Feet	Distance to Contour			
			Width						70 CNEL	65 CNEL	60 CNEL	55 CNEL	
1						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
2						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
3						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
4						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
5						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
6						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
7						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8						0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

¹ Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name:

Project Number:

Scenario: Horizon Year

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	Ldn at 100 Feet	Distance to Contour			
										70 Ldn	65 Ldn	60 Ldn	55 Ldn	
1	Airport Way	CA-120 EB Ramps to W Atherton Dr	2	21	21,290	40	0	2.0%	1.0%	64.7	-	93	295	934
2		W Atherton Dr to Woodward Ave	2	12	14,080	40	0	2.0%	1.0%	62.9	-	61	194	614
3	W Atherton Dr	Airport Way to Sage Sparrow Ave	4	30	7,360	45	0	2.0%	1.0%	61.4	-	-	139	439
4		Sage Sparrow Ave to Sparrowhawk St	4	25	7,065	45	0	2.0%	1.0%	61.2	-	-	132	418
5		east of Sparrowhawk St	4	25	5,640	35	0	2.0%	1.0%	57.8	-	-	61	193
6							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
7							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

¹ Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name:

Project Number:

Scenario: Horizon Year Plus Project

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	Ldn at 100 Feet	Distance to Contour			
										70 Ldn	65 Ldn	60 Ldn	55 Ldn	
1	Airport Way	CA-120 EB Ramps to W Atherton Dr	2	21	25,500	40	0	2.0%	1.0%	65.5	-	112	354	1,119
2		W Atherton Dr to Woodward Ave	2	12	14,728	40	0	2.0%	1.0%	63.1	-	64	203	642
3	W Atherton Dr	Airport Way to Sage Sparrow Ave	4	30	12,218	45	0	2.0%	1.0%	63.6	-	73	230	729
4		Sage Sparrow Ave to Sparrowhawk St	4	25	12,052	45	0	2.0%	1.0%	63.5	-	71	225	712
5		east of Sparrowhawk St	4	25	6,612	35	0	2.0%	1.0%	58.5	-	-	71	226
6							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
7							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8							0	2.0%	1.0%	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

¹ Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.