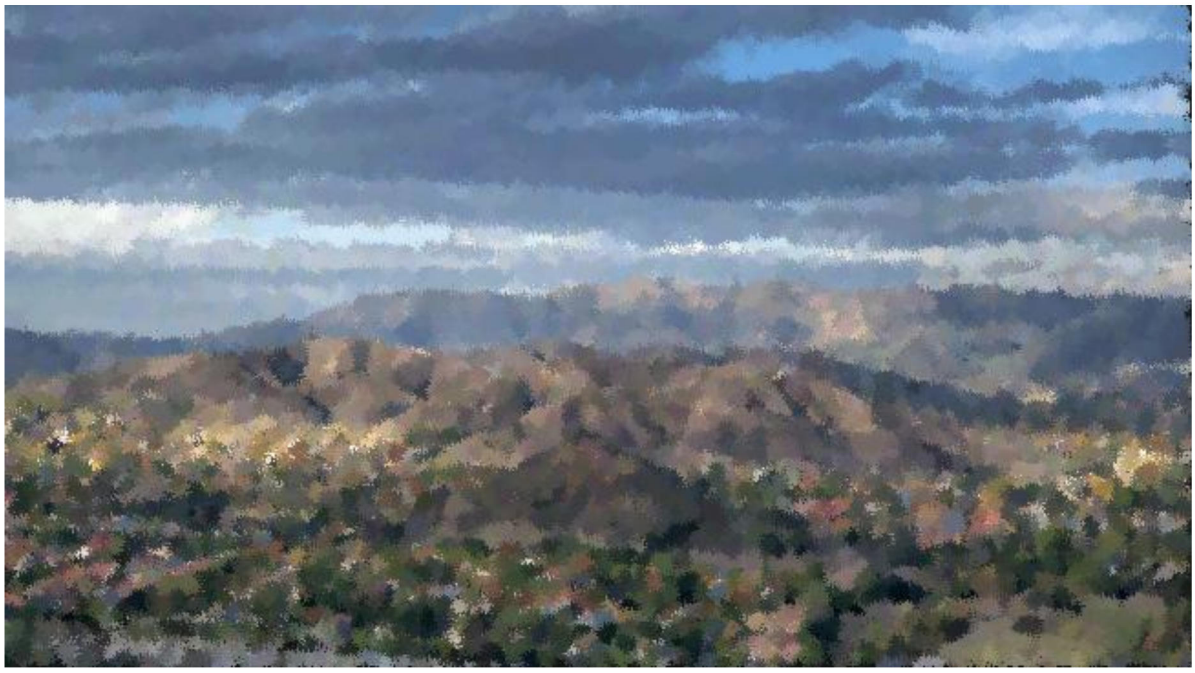


Cypress Sands Residential

Final Initial Study - Mitigated Negative Declaration

prepared by

City of Menifee
Planning Division, Department of Community Development
29844 Haun Road Menifee, California 92586
Contact: Ryan Fowler, Senior Planner

prepared with the assistance of

Rincon Consultants, Inc.
250 East 1st, Suite 1400
Los Angeles, California 90012

November **2025**

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

Cypress Sands Residential

Draft Initial Study – Mitigated Negative Declaration

prepared by

City of Menifee
Planning Division, Department of Community Development
29844 Haun Road Menifee, California 92586
Contact: Ryan Fowler, Senior Planner

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Initial Study

1. Project Title

Cypress Sands Townhomes Project.

2. Lead Agency Name and Address

City of Menifee
29844 Haun Road
Menifee, California 92586

3. Contact Person and Phone Number

Ryan Fowler, Principal Planner
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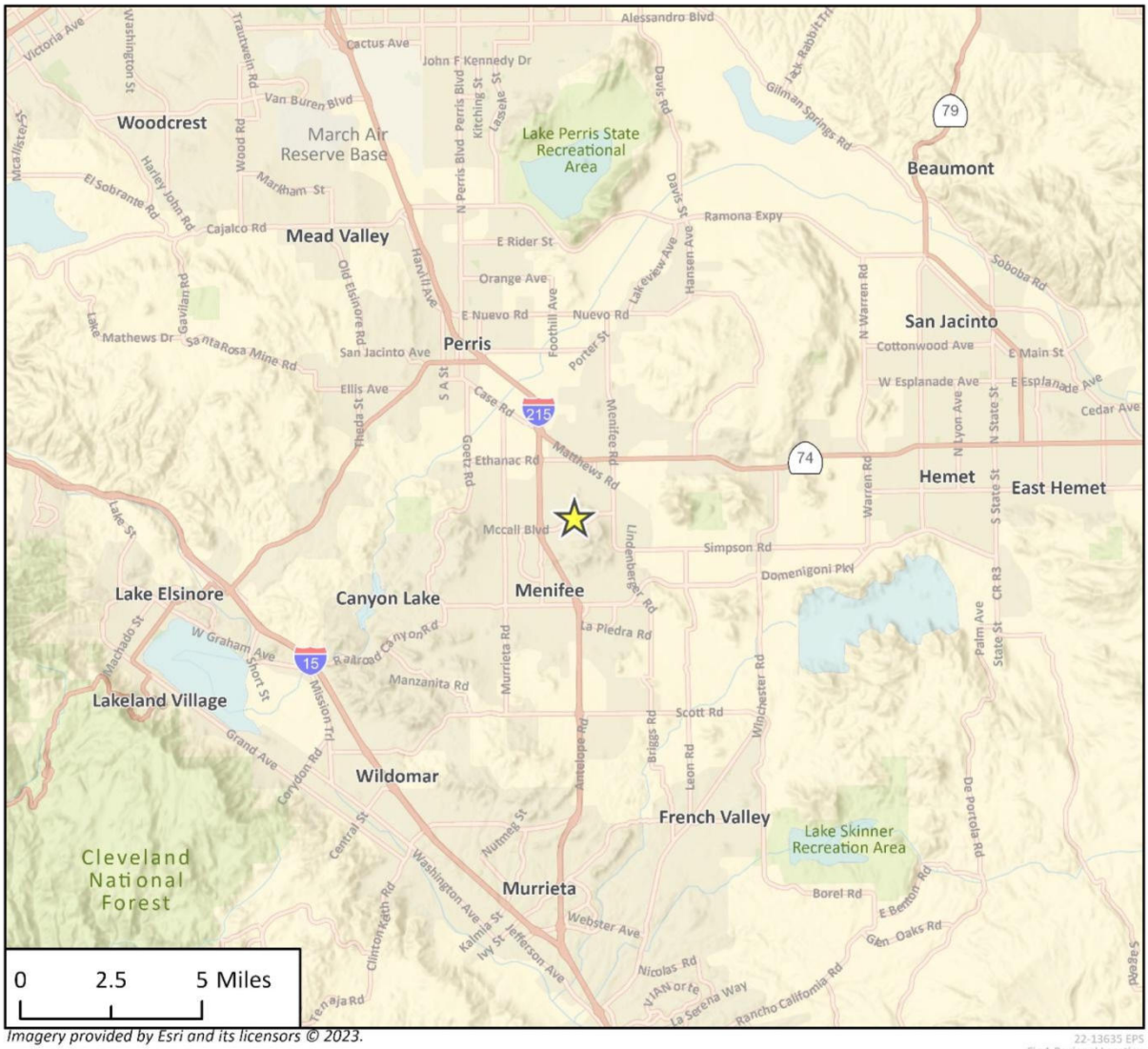
4. Project Location

The planned development is located in the City of Menifee ("City"), California ("Project Site"). Specifically, the Project Site is located north of Tioga lane, west of Antelope Road, south of Chambers Avenue, and east of Chatham Lane. The Project Site encompasses approximately 7.93 gross acres identified as Assessor Parcel Number (APN) 333-050-034. Figure 1, below, depicts the Project Site in relation to the general region and Figure 2, below, shows the Project Site in its neighborhood context.

5. Project Sponsor's Name and Address

Fairbrook Communities, LLC. (Applicant)
James Walters
2280 Wardlow Circle, Suite 250
Corona, CA 92878

Figure 1 Regional Location



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Fig 1 Regional Location

★ Project Location

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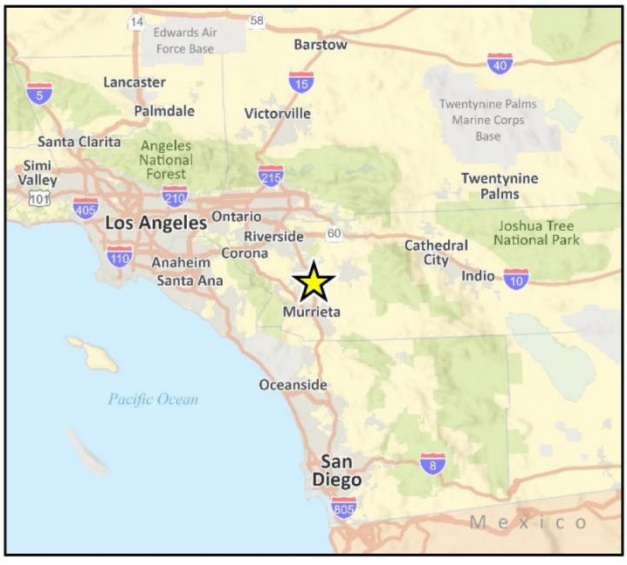


Figure 2 Project Location



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22-13635 EPS
Fig 2 Project Location

6. General Plan Designation

The Project Site is within the 8.1-14 dwelling units per acre (du/ac) General Plan designation.

7. Zoning

The Project Site is within the Medium Density Residential (MDR) zoning designation. This zone allows for a range of single-family attached and detached residences, including townhouses, stacked flats, courtyard homes, patio homes, and zero lot line homes. The density range within an MDR zone is 8 to 14 dwelling units per acre.

8. Regional Setting

The City of Menifee is an inland city in Riverside County. Menifee is surrounded by Canyon Lake and Lake Elsinore to the west, the City of Perris to the north, the City of Hemet to the east, the City of Wildomar to the southwest, and the Cities of Murrieta and Temecula to the south. Regional access to the Project Site is available from Interstate 215 (I-215).

Local vehicular access to the Project Site is available by Chambers Avenue, Antelope Road, Chatham Lane, and Tioga lane. The Project Site is also accessible via Riverside Transit Agency (RTA) bus route 61, with the nearest bus stop located approximately one mile southwest of the Project Site at the Encanto FS McCall stop.

9. Description of Project

The proposed multi-family residential development includes 132 total units within 18 two-story buildings totaling 124,404 square-feet of residential development ("Proposed Project") coverage. The Proposed Project includes a gross area of 7.95 acres and 7.34 net acres with a density of 18.0 du/ac. The Proposed Project includes 102 three-bedroom units and 30 four-bedroom units along with 295 total parking spaces.

10. Surrounding Land Uses and Setting

The Project Site is one parcel located north of Tioga Lane, south of Chambers Avenue, and between Antelope Road and Chatham Lane. The Project Site is currently heavily disturbed and contains limited ruderal vegetation. The Project Site is surrounded by mixed land uses and single-family residences. In particular, single-family residences are found directly west and northeast of the Project Site. The Legado Specific Plan is located directly north of the Project Site, which proposes a mixed land use, primarily single-family residential, development. Currently, the Legado Specific Plan area is vacant and undeveloped. Also, the Menifee Global Medical Center is located approximately 0.15 miles (800 feet) east of the Project Site. Table 1, below, lists the existing land uses that are located immediately adjacent to the Project Site.

Table 1 Surrounding Land Uses

Direction	General Plan Designation	Zoning District	Existing Land Use
Project Site	8.1-14 du/ac Residential	MDR	Vacant
North	Legado Specific Plan (SP)	Legado SP	Vacant/Under Construction
South	EDC-MB	EDC-MB	Vacant
East	EDC-MB	EDC-MB	Vacant
West	5.1-8 du/ac Residential	Low Medium Density Residential (LMDR)	Residential

11. Other Public Agencies Whose Approval is Required

Eastern Municipal Water District (water/sewer connections); Santa Ana Regional Water Quality Control Board [Santa Ana RWQCB] (National Pollutant Discharge Elimination System [NPDES] Permit); California Department of Fish and Wildlife (CDFW); Regional Water Quality Control Board (RWQCB); and Riverside County Airport Land Use Compatibility Plan review.

12. Have California Native American Tribes Traditionally and Culturally Affiliated with the Project Area Requested Consultation Pursuant to Public Resources Code Section 21080.3.1?

Request for AB52 tribal consultation sent out 8/01/2022 to local tribes in the area (Pechanga Band of Indians, Agua Caliente, Rincon Band of Luiseno Indians, and Soboba). Pechanga officially requested tribal consultation for the project. The cultural report was sent to Pechanga and Soboba on 1/09/2025 along with the standard city cultural conditions of approval. The City met with Soboba on 1/28/2025 as part of ongoing quarterly meetings and Soboba agreed with implementing the agreed upon conditions of approval and had no further comments on the project. The City met with Pechanga on 5/15/2025 as a part of the ongoing quarterly meetings; the tribe agreed to implementing the following two conditions; 1) inadvertent finds and 2) discovery of human remains.

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Environmental Factors Potentially Affected

This project would potentially affect the environmental factors checked below, involving at least one impact that is "Potentially Significant" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry 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	■	Tribal Cultural Resources
☐	Utilities and Service Systems	☐	Wildfire	☐	Mandatory Findings of Significance

Determination

Based on this initial evaluation:

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

■ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to 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 "less than significant with mitigation incorporated" 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 potential 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.

Signature	Date
Printed Name	Title

Environmental Checklist

1 Aesthetics

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	■	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	■	☐

For purposes of determining significance under CEQA, scenic resources are the visible natural and cultural features of the landscape that contribute to the public's enjoyment of the environment. A scenic vista is defined as a public viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. Public views are those that are experienced from a publicly accessible vantage point, such as a roadway or public park. Scenic vistas can be officially designated by public agencies. The California Department of Transportation (Caltrans) manages the California State Scenic Highway Program, which designates state scenic highways. Scenic highways are highways located in areas of natural beauty. A scenic highway becomes officially designated when the local governing body applies to and is approved by Caltrans for scenic highway designation and adopts a Corridor Protection Program that preserves the scenic quality of the land that is visible from the highway right of way.

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

A significant impact would occur if a project were to introduce incompatible development within a field of view containing a scenic vista or substantially block views of a scenic vista. Viewsheds refer to the visual qualities of the geographical area that is defined by the horizon, topography, and other natural features that give an area its visual boundary and context, or by artificial developments that have become prominent visual components of an area.

The natural mountainous setting of the Menifee area is critical to its overall visual character and provides scenic vistas. Scenic views from Menifee include the San Jacinto Mountains to the northeast and east; the San Bernardino Mountains to the north; the San Gabriel Mountains to the northwest; and the Santa Ana Mountains to the west and southwest. Many of these scenic vistas are outside the City limits and beyond the planning area boundary so views of these vistas vary given their distance from the Project Site. The Project is located north of Tioga Lane, south of Chambers Avenue, and between Antelope Road and Chatham Lane, where views of hillsides and mountains are visible from north, east, and south directions from the Project Site, though existing structures and trees obstruct clear viewsheds. However, as discussed in the General Plan Draft EIR, implementation of General Plan policies would ensure that areas that are designated for development would minimize impacts on scenic vistas by preserving the undisturbed hillsides and other natural landforms.

As noted above, the Project Site is within the 8.1-14 dwelling units per acre (du/ac) General Plan designation, which is primarily developed with single-family residential land uses and primarily surrounded by single-family residential development. Existing views of the San Gabriel and San Bernadino Mountains are limited due to their distance from the Project Site and limited by the surrounding development. The project would not substantially block views of the San Gabriel and San Bernadino Mountains due to the relatively low height of the project and existing development surrounding the Project Site. Therefore, impacts related to scenic vistas would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

A significant impact would occur if scenic resources were damaged or removed by a project within a designated scenic highway. The California Scenic Highway System indicates that no existing or proposed State scenic highways are located in the vicinity of the Project Site (Caltrans 2025). However, the City of Menifee General Plan Community Design Element designates I-215 as an Enhanced Landscape Corridor (Menifee 2013). Enhanced Landscape Corridors are intended to help foster a strong identity along the city's major corridors and receive special design consideration to ensure they complement the existing community and help visually frame the community's most distinctive features. The City's Scenic Corridors are the same as roadways designated Eligible County Scenic Highways in the Circulation Element. The Proposed Project is located approximately 0.9 miles east of I-215. The Proposed Project cannot be seen from I-215 due to the flat topography of the area and surrounding development.

The Project Site contains no scenic resources such as rock outcroppings, significant trees, or historical buildings. Therefore, development of the Proposed Project would not damage scenic resources within view from a state scenic highway. Moreover, as discussed in the General Plan EIR, implementation of General Plan policies and compliance with City Design Guidelines would ensure

that the Proposed Project would not cause significant impacts on these resources. In addition, the General Plan EIR determined that because I-215 is not officially designated as a scenic highway, impacts to these views would be less than significant, and no mitigation is required.

LESS-THAN-SIGNIFICANT IMPACT

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

Development of the Proposed Project could result in a significant impact if it resulted in substantial degradation of the existing visual character or quality of the site and its surroundings. Degradation of visual character or quality is defined by substantial changes to the existing site appearance through construction of structures such that they are poorly designed or conflict with the site's existing surroundings.

Construction of the Proposed Project would result in short-term impacts to the existing visual character and quality of the area. Construction activities would require the use of equipment and storage of materials within the Project Site. However, construction activities are temporary and would not result in any permanent visual impact.

Upon Project completion, the Proposed Project would consist of 18 multi-family residential buildings two-stories in height. The Project would also include landscaping improvements. The Project would be subject to review by City staff to ensure consistency with the City Design Guidelines and Zoning Code. All buildings would be consistent with City design and building height requirements and limitations. The Proposed Project would slightly change the visual character of the Project Site by adding structures and landscaping to a vacant, undeveloped site; however, the development would be consistent with the existing single-family residential subdivision adjacent to the west of the Project Site and the future single-family residential subdivision to the north of the Project Site. With compliance with City regulations, the Proposed Project would have less than significant impacts to the visual character of the existing site and its surroundings.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Spill light occurs when lighting standards such as streetlights, parking lot lighting, exterior building lighting, and landscape lighting are not properly aimed or shielded to direct light to the desired location and light escapes and partially illuminates a surrounding location. Glare is the result of improperly aimed or blocked lighting sources that are visible against a dark background such as the night sky. Glare generally does not result in illumination of off-site locations but results in a visible source of light viewable from a distance.

The Proposed Project is in an urban area of the City that is primarily developed with single-family residences. Existing lighting and glare sources in the surrounding area consists of streetlights and exterior lighting/glare associated with surrounding residential vehicles. Development of the Proposed Project would include adding lighting to the site with outdoor on-site lighting, internal walking paths, landscaping/street frontage lights, and safety-related lighting. However, it would not represent a substantial increase in daytime and nighttime lighting. For these reasons, the Proposed

Project would not result in a substantial new source of light such that day or nighttime views in the area would be adversely affected. Rather, the proposed exterior lighting and building materials would be consistent with those of surrounding uses.

In addition, the Proposed Project design does not propose any new highly reflective materials that could potentially cause significant glare during the day, such as stainless-steel panels. The design of this Project, including its finish, colors, and materials, would be reviewed for approval through the City's review process. This regulatory procedure provides the City with an additional layer of review for aesthetics including light and glare, and an opportunity to incorporate additional conditions to improve the project's building materials and lighting plans. The Proposed Project would adhere to existing local regulations regarding light and glare, including Chapter 6.01 of the Menifee Municipal Code and the City of Menifee General Plan Community Design Element. Thus, impacts related to light and glare would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	■
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 4526); or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	■
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	■

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

The Project Site is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Department of Conservation (DOC) (2022). The Project Site is designated as Farmland of Local Importance by the Farmland Mapping and Monitoring Program (FMMP) (DOC 2018). Farmland of Local Importance is defined by either land with soils which would be classified as Prime and Statewide Farmland but lack irrigation for agricultural production or have been historically used as agricultural land (DOC 2018). As noted above, the Project Site is vacant, undeveloped, and is not used as agricultural land.

In the City's General Plan, the Project Site is planned for mixed use development and is zoned for residential development (MDR). According to the General Plan and Zoning Map, the Project Site is

intended for non-farmland uses, and would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance into non-agricultural uses. Therefore, no impact would occur.

NO IMPACT

b. Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

No Williamson Act Contracts are active for the Project Site. The Project Site is zoned for residential development (MDR), which is intended for multi-family residential development. Therefore, the Proposed Project would not conflict with existing zoning for agricultural use or a Williamson Act Contract. Thus, no impact would occur.

NO IMPACT

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

Public Resources Code Section 12220(g) identifies forest land as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish, and wildlife, biodiversity, water quality, recreation, and other public benefits. The Project Site and surrounding properties are not currently being managed or used for forest land as defined in Public Resources Code Section 12220(g). The Project Site is undeveloped and zoned for residential development. Therefore, development of the Proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. Thus, no impact would occur.

NO IMPACT

d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The Project Site is undeveloped and not considered forest land. The Project Site is zoned for residential development; thus, there would be no loss of forest land or conversion of forest land to non-forest use as a result of the Proposed Project. As a result, no impact would occur.

NO IMPACT

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

As mentioned above, the Project Site is classified as Farmland of Local Importance; however, the Project Site is designated by the General Plan for mixed use development and zoned as MDR for multi-family residential development. The Project Site is not currently being used for agriculture, nor has it been historically used for agriculture. Development of the Proposed Project would not involve changes in the existing environment in a manner that would result in the conversion of agricultural land to non-agricultural land or forest land to non-forest land. Therefore, no impact would occur.

NO IMPACT

3 Air Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	■	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	■	☐	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	■	☐

Overview of Air Pollution

The federal and State Clean Air Acts (CAA) mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for "criteria pollutants" and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[1] nitrogen oxides (NO_X), particulate matter with diameters of ten microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between VOC and NO_X. Secondary pollutants include oxidants, ozone, sulfate and nitrate particulates (smog). Air pollutants can be generated by the natural environment, such as when high winds suspend fine dust particles.

Air pollutant emissions are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories:

- Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat.

[1] CARB defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term VOC is used in this IS-MND.

- Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and can also be divided into two major subcategories:

- On-road sources that may be legally operated on roadways and highways.
- Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

Air Quality Standards and Attainment

The Project Site is located is located in the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). As the local air quality management agency, the SCAQMD is required to monitor air pollutant levels to ensure that the NAAQS and CAAQS are met and, if they are not met, to develop strategies to meet the standards.

Depending on whether the standards are met or exceeded, the SCAB is classified as being in "attainment" or "nonattainment." In areas designated as non-attainment for one or more air pollutants, a cumulative air quality impact exists for those air pollutants, and the human health impacts associated with these criteria pollutants, presented in Table 2, are already occurring in that area as part of the environmental baseline condition. Under state law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. The SCAB is in nonattainment for ozone and $PM_{2.5}$ federal standards. Also, the SCAB is in nonattainment for the state standard for ozone, PM_{10}, and $PM_{2.5}$ and designated unclassifiable or in attainment for all other federal and state standards (CARB 2023). The nonattainment statuses result from several factors. These factors include the combination of emissions from a large urban area, the regional meteorological conditions adverse to the dispersion of air pollution emissions, and the mountainous terrain surrounding the SCAB that traps pollutants (SCAQMD 2022).

Table 2 Health Effects Associated with Non-Attainment Criteria Pollutants

Pollutant	Adverse Effects
Ozone	(1) Short-term exposures: (a) pulmonary function decrements and localized lung edema in humans and animals and (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage.
Suspended particulate matter (PM_{10} and $PM_{2.5}$)	(1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma).

Source: USEPA 2024

Air Quality Management

Since the SCAB currently exceeds ozone and $PM_{2.5}$ NAAQS standard, the SCAQMD is required to implement strategies to reduce pollutant levels to achieve attainment of the NAAQS. To meet the NAAQS and CAAQS, the SCAQMD has adopted a series of air quality management plans (AQMPs)

that serve as a regional blueprint to develop and implement an emission reduction strategy that will bring the area into attainment with the standards in a timely manner. The most significant air quality challenge in the SCAB is to reduce NO_X emissions to meet the 2037 ozone standard deadline for the non-Coachella Valley portion of the SCAB, as NO_X plays a critical role in the creation of ozone. The 2022 AQMP includes strategies to ensure the SCAQMD does its part to further the district's ability to meet the 2015 federal ozone standards (SCAQMD 2022). The 2022 AQMP builds on the measures already in place from the previous AQMPs and includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technology, best management practices, co-benefits from existing programs, incentives, and other CAA measures to meet the 8-hour ozone standard.

The SCAQMD's strategy to meet the NAAQS and CAAQS distributes the responsibility for emission reductions across federal, State, and local levels and industries. The majority of these emissions are from heavy-duty trucks, ships, and other State and federally regulated mobile source emissions that the majority of which are beyond SCAQMD's control. The SCAQMD has limited control over truck emissions with rules such as Rule 1196. In addition to federal action, the 2022 AQMP relies on substantial future development of advanced technologies to meet the standards, including the transition to zero- and low-emission technologies. The AQMP also incorporates the transportation strategy and transportation control measures from Southern California Association of Governments (SCAG)'s 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy [RTP/SCS] Plan (Connect SoCal) (SCAG 2020). The SCAG is required by law to ensure that transportation activities "conform" to, and are supportive of, the goals of regional and State air quality plans to attain the NAAQS. Connect SoCal includes transportation programs, measures, and strategies generally designed to reduce vehicle miles traveled (VMT), which are contained in the AQMP.

Air Emission Thresholds

The SCAQMD approved the *CEQA Air Quality Handbook* in 1993. Since then, the SCAQMD has provided supplemental guidance on their website to address changes to the methodology and nature of CEQA. Some of these changes include recommended thresholds for emissions associated with both construction and operation of the project are used to evaluate a project's potential regional and localized air quality impacts (SCAQMD 2023).

Regional Thresholds

The SCAQMD recommends quantitative regional significance thresholds for temporary construction activities and long-term project operation in the SCAB. These thresholds, shown in Table 3, are used to evaluate a project's potential air quality impacts.

Table 3 SCAQMD Regional Air Quality Significance Thresholds

Pollutant	Construction (pounds per day)	Operation (pounds per day)
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550

NO_x = Nitrogen Oxides; VOC = Volatile Organic Compounds; PM_{10} = Particulate Matter with a diameter no more than 10 microns; $PM_{2.5}$

= Particulate Matter with a diameter no more than 2.5 microns; SO_x = Sulfur Oxide; CO = Carbon Monoxide

Source: SCAQMD 2023

Localized Significance Thresholds

In addition to the above regional thresholds, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs have been developed for NO_X, carbon monoxide, PM_{10}, and $PM_{2.5}$ and represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor. LSTs take into consideration ambient concentrations in each source receptor area (SRA), distance to the sensitive receptor, and project size. LSTs have been developed for emissions within site areas that measure one, two, or five acres. LSTs only apply to emissions in a fixed stationary location (such as fugitive dust, equipment exhaust, and operational energy and area sources) and are not applicable to mobile sources, such as cars on a roadway (SCAQMD 2009).

The Project Site is within SRA 24 (Perris Valley). SCAQMD provides LST lookup tables for Project Sites that measure one, two, or five acres. The project's disturbance area is approximately 7.95 acres; therefore, this analysis utilizes the five-acre LSTs. LSTs are provided for receptors at a distance of 82 feet (25 meters) 164 feet (50 meters), 328 feet (100 meters), 656 (200 meters), 1,640 feet (500 meters) between the project disturbance boundary to the sensitive receptors. The Proposed Project analysis assumes main construction activity would occur approximately 50 feet (15 meters) east of the closest sensitive receptor, which consists of single-family residential properties. Therefore, the analysis uses LST values for 25 meters, consistent with SCAQMD methodology (SCAQMD 2009). LSTs for projects in SRA 24 on a five-acre site with a receptor 25 meters away are shown in Table 4.

Table 4 SCAQMD LSTs for Construction and Operation

	Allowable Emissions for a Five-Acre Site in SRA-24 for a Receptor 25 Meters Away (pounds per day)	
Pollutant	**Construction**	**Operation**
Gradual conversion of NO_X to NO_2	270	270
CO	1,577	1,577
PM_{10}	13	4
$PM_{2.5}$	8	2

SRA = source receptor area; NO_x = nitrogen oxides; NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = particulate matter with a diameter no more than 10 microns; $PM_{2.5}$ = particulate matter with a diameter no more than 2.5 microns

Source: SCAQMD 2009

Toxic Air Containments Thresholds

The SCAQMD has developed significance thresholds for the emissions of toxic air contaminants (TACs) based on health risks associated with elevated exposure to such compounds. For carcinogenic compounds, cancer risk is assessed in terms of incremental excess cancer risk. A project would result in a potentially significant impact if it would generate an incremental excess cancer risk of 10 in 1 million (1×10^{-6}) or a cancer burden of 0.5 excess cancer cases in areas exceeding a one-in-one-million risk. In addition, non-carcinogenic health risks are assessed in terms

of a hazard index. A project would result in a potentially significant impact if it would result in a chronic and acute hazard index greater than 1.0 (SCAQMD 2023).

Methodology

Air pollutant and GHG emissions generated by project construction and operation were estimated using the California Emissions Estimator Model (CalEEMod), version 2022.1. CalEEMod uses project-specific information, including the project's land uses, location, and construction parameters, to model construction and operational emissions. The analysis reflects the construction and operation of the project as described under Section 1, *Description of Project*.

Project construction would primarily generate temporary criteria pollutant emissions from construction equipment operation onsite and vehicle trips associated with construction, such as workers, vendor, and water truck trips. Construction of the Proposed Project was analyzed based on the building characteristics provided by the project engineer. Project construction is scheduled to begin in February 2026 and end in February 2027, with construction activities occurring from Monday through Saturday. The Project Site is vacant and would not include a demolition phase. A construction equipment list for the site preparation, grading, building construction, paving, and architectural coating phases were provided by the applicant. The project would export approximately 5,710 cubic yards of soil during the grading phase. It was assumed that construction equipment would be diesel-powered and that the project would be required to comply with all applicable regulations, such as SCAQMD Rule 403 for dust control measures and Rule 1113 for architectural coating VOC limits.

Operational emissions modeled include mobile source emissions and area source emissions. Mobile source emissions are generated by vehicle trips to and from the Project Site. The average daily trips were sourced from the Cypress Sands Townhomes Traffic Study prepared by Translutions, Inc. (Translutions, Inc. 2025). Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coatings. The project would not include fireplaces in the residential units. In addition, the residential buildings would not include natural gas appliances; therefore, the project would not emit energy source emissions.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

A project may be inconsistent with the AQMP if it would generate population, housing, or employment growth exceeding forecasts used in the development of the AQMP. The 2022 AQMP, the most recent AQMP adopted by the SCAQMD, incorporates local county general plans and the Connect SoCal's socioeconomic forecast projections of regional population, housing, and employment growth (SCAQMD 2022, SCAG 2020). [2].

The population growth forecasts in Connect SoCal estimate that the City of Menifee's population would increase to 129,800 people by 2045, which is an increase of 40,200 residents from the city's estimated 2016 baseline (SCAG 2020). The project would construct 18 two-story townhome building, consisting of 132 residential units, on a site currently vacant. According to the California Department of Finance (DOF), the City of Menifee has an estimated average person per household size of 2.85 (DOF 2024). Therefore, the project would increase the local population by up to 377

[2] On April 4, 2024, SCAG's Regional Council formally adopted the 2024-2050 RTP/SCS (titled Connect SoCal 2024). However, the SIPs were adopted prior to this date and relies on the demographic and growth forecasts of the 2020-2045 RTP/SCS; therefore, these forecasts are utilized in the analysis of the project's consistency with the AQMP.

persons (132 units x 2.85 persons per unit) and would be accommodated within the SCAG growth forecast for the City of Menifee.

In addition, the AQMP provides strategies and measures to reach attainment with the thresholds for 8-hour and 1-hour ozone and $PM_{2.5}$. As shown in Table 5 and Table 6, below, the project would not generate criteria pollutant emissions that would exceed SCAQMD thresholds for ozone precursors (VOC and NO_X) and $PM_{2.5}$. Since the project would also be consistent with population growth projections for the City, the project would not conflict with or obstruct implementation of the applicable air quality plan and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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

Construction Emissions

Project construction would generate temporary air pollutant emissions associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction equipment and construction vehicles. In addition, construction equipment would release VOC emissions during the drying of architectural coating and paving phases. Table 5 summarizes the estimated maximum daily emissions of pollutants during project construction. As shown therein, construction-related emissions would not exceed SCAQMD thresholds. Therefore, project construction would not 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. Impacts would be less than significant.

Table 5 Estimated Maximum Daily Construction Emissions

	Maximum Daily Emissions (pounds per day)					
Construction	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2026	39	47	65	<1	5	2
2027	1	5	10	<1	2	<1
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

VOC = Volatile organic compounds NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter with a diameter no more than 10 microns; $PM_{2.5}$ = particulate matter with a diameter no more than 2.5 microns.

Notes: Some numbers may not add up precisely due to rounding considerations.

Source: CalEEMod worksheets in Appendix A, see Table 2.2 "Construction Emissions by Year, -Unmitigated" emissions. Highest of Summer and Winter emissions results are shown for all emissions.

Operational Emissions

Operation of the project would generate criteria air pollutant emissions associated with mobile sources (i.e., vehicle trips to and from the Project Site) and area sources (e.g., architectural coatings, consumer products, and landscaping equipment). The project would not include natural gas appliances; therefore, energy criteria pollutant emissions would not be generated onsite. Table 6

summarizes the project's maximum daily operational emissions by emission source. As shown therein, operational emissions would not exceed SCAQMD regional thresholds for criteria pollutants, and project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard and impacts would be less than significant.

Table 6 Estimated Maximum Daily Operational Emissions

	Maximum Daily Emissions (pounds per day)					
Emissions Source	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Mobile	4	3	29	<1	7	2
Area	4	<1	7	<1	<1	<1
Total	**8**	**3**	**37**	**<1**	**7**	**2**
SCAQMD Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

VOC = volatile organic compounds; NO_X = nitrogen oxide; CO = carbon monoxide; PM_{10} = particulate matter with a diameter no more than 10 microns; $PM_{2.5}$ = particulate matter with a diameter no more than 2.5 microns; SO_2= sulfur dioxide
Notes: Some numbers may not add up precisely due to rounding considerations.
Source: Table 2.5 "Operations Emissions by Sector, Unmitigated" emissions. Highest of Summer and Winter emissions results are shown for all emissions. See CalEEMod worksheets in Appendix A.

LESS THAN SIGNIFICANT IMPACT

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are facilities or land uses where members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses, spend considerable time. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 2005). Sensitive receptors nearest to the Project Site consist of residences approximately 50 feet west of the Project Site. Localized air quality impacts to sensitive receptors typically result from localized CO hotspot, criteria air pollutant emissions, and TACs, which are discussed in the following subsections.

Localized Carbon Monoxide Hotspot Impact

A CO hotspot is a localized concentration of CO that is above a CO ambient air quality standard. The SCAB has been attaining federal CO standards since 2007, and most air quality monitoring stations no longer report CO levels (SCAQMD 2017). The nearest monitoring station from the Project Site measured a maximum 1-hour and 8-hour CO concentrations of 1.3 ppm and 0.7 ppm, respectively, in 2023 (SCAQMD 2024). These concentrations are well below the respective 1-hour and 8-hour standards of 20 ppm and 9 ppm. Typical development projects, such as the project, do not emit the levels of CO necessary to result in a localized hot spot.

As an example, a detailed carbon monoxide analysis was conducted during the preparation of the SCAQMD's 2003 AQMP. The locations selected for microscale modeling in the 2003 AQMP included high average daily traffic (ADT) intersections in the SCAB that are expected to experience the highest CO concentrations. The highest CO concentration observed was at the intersection of Wilshire Boulevard and Veteran Avenue on the west side of Los Angeles near Interstate 405,

approximately 77 miles northwest of the Project Site. The concentration of CO at this intersection was 4.6 ppm, which is well below the State and Federal standards. The Wilshire Boulevard/Veteran Avenue intersection had an ADT of approximately 100,000 vehicles per day at the time of the study (SCAQMD 2003). In the City of Menifee General Plan Circulation Element Traffic Study's Table 4-1, the highest existing (2012) ADT along McCall Boulevard is 31,400 ADT (City of Menifee 2013). The Proposed Project is expected to generate 950 daily trips but would not increase traffic volumes on Menifee Road to more than 100,000 ADT. This is significantly below the 100,000 ADT at the intersection studied by SCAQMD in the 2003 AQMP, which found that CO emissions at that intersection were below the federal standards. Therefore, the project would not expose sensitive receptors to substantial CO pollutant concentrations and impacts would be less than significant.

Localized Significance Thresholds

The LST methodology was developed to be used as a tool to analyze localized impacts associated with project-specific level Proposed Projects. If the calculated emissions for the proposed construction or operational activities are below the LST emission levels found on the LST mass rate look-up tables (Appendix C of LST Methodology) and no potentially significant impacts are found to be associated with other environmental issues, then the proposed construction or operation activity is not significant for air quality. The project analysis assumes the main construction activity would occur approximately 50 feet east of single-family residences. The allowable emission for project utilizes the 25 meter (82 feet) receptor distance, and the project is in SRA 24 (Perris Valley). Table 7 summarizes the project's maximum localized daily construction and operational emissions from the Proposed Project. As shown therein, localized construction and operational emissions would not exceed SCAQMD LST thresholds. Therefore, the project would not expose sensitive receptors to substantial localized criteria pollutant concentrations and impacts would be less than significant.

Table 7 Project LST Construction and Operational Emissions

	Maximum Daily Emissions (pounds per day)			
Year	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Construction Onsite Emissions	46	60	4	2
SCAQMD LST	270	1,577	13	8
Threshold Exceeded?	**No**	**No**	**No**	**No**
Maximum Operational Onsite Emissions	<1	7	<1	<1
SCAQMD LST	270	1,577	4	2
Threshold Exceeded?	**No**	**No**	**No**	**No**

VOC = volatile organic compounds; NO_x = nitrogen oxide; CO = carbon monoxide; PM_{10} = particulate matter with a diameter no more than 10 microns; $PM_{2.5}$ = particulate matter with a diameter no more than 2.5 microns; SO_2= sulfur dioxide

Notes: Some numbers may not add up precisely due to rounding considerations. Maximum onsite emissions are the highest emissions that would occur on the Project Site from onsite sources, such as heavy construction equipment and architectural coatings, and excludes off-site emissions from sources such as construction worker vehicle trips and haul truck trips.

Source: CalEEMod worksheets in Appendix A, see Table 3.2 – 3.11 "Construction Emissions Details" emissions. Highest of Summer and Winter emissions results are shown for all emissions.

Toxic Air Contaminants

Construction

Construction-related activities would result in temporary project-generated diesel particulate matter exhaust emissions from off-road, heavy-duty diesel equipment for site preparation, grading, building construction, and other construction activities. Generation of diesel particulate matter, which was identified as a TAC by CARB in 1998, from construction projects typically occurs in a single area for a short period. The Proposed Project's construction would occur in phases over approximately 13 months with sensitive receptors approximately 50 feet from the Project Site. The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has to the substance. Dose is positively correlated with time, and a more extended exposure period would result in a higher exposure level for the maximally exposed individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a more extended period.

The Proposed Project would be consistent with the applicable AQMP requirements and control strategies intended to reduce emissions from construction equipment and activities. The Proposed Project would comply with the CARB Air Toxics Control Measure that limits diesel powered equipment and vehicle idling to no more than five minutes at a location, and the CARB In-Use Off-Road Diesel Vehicle Regulation; compliance with these would minimize emissions of TACs during construction. Additionally, according to SCAQMD's Perris air monitoring station, the prevailing northwest winds blow construction-related TACs way from the nearest sensitive receptors (SCAQMD 2025). However, given the construction area's proximity to nearby sensitive receptors off-site, particulate matter emissions during site preparation and other construction activities could potentially result in substantial TAC exposure and impacts would be potentially significant.

Operation

CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) provides recommendations regarding the siting of new sensitive land uses near potential sources of air toxic emissions (e.g., freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities). CARB guidelines recommend siting distances both for the development of sensitive land uses in proximity to TAC sources and for the addition of new TAC sources in proximity to existing sensitive land uses. Residential land uses are not considered land uses that generate substantial TAC emissions based on reviewing the air toxic sources listed in CARB's guidelines. The expected hazardous TACs generated on site (e.g., cleaning solvents, paints, landscape pesticides, etc.) for the proposed land uses would be below thresholds warranting further study under the California Accidental Release Program. Therefore, the project would not expose sensitive receptors to substantial operational TAC pollutant concentrations and impacts would be less than significant.

Mitigation Measure

AQ-1 Construction Emissions Reduction

Prior to issuance of grading permits, the City shall confirm that the grading plan, building plans, and specifications stipulate that the following measures shall be implemented:

- All mobile off-road equipment (wheeled or tracked) used during site preparation and grading construction activities shall meet USEPA Tier 4 Final standards. Tier 4 certification can be for the original equipment or equipment that is retrofitted to meet the Tier 4 Final standards.
- Alternative fuel (natural gas, propane, electric, etc.) construction equipment may be incorporated where available.
- These requirements shall be incorporated into the contract agreement with the construction contractor. A copy of the equipment's certification or model year specifications shall be available upon request for all equipment on-site.
- Electricity shall be supplied to the site from the existing power grid to support the electric construction equipment as applicable. If connection to the grid is determined to be infeasible for portions of the project, a non-diesel fueled generator shall be used.

Significance After Mitigation

The maximum PM_{10} exhaust emissions, which are used to represent diesel particulate matter emissions for this analysis, would occur during site preparation and grading activities. Mitigation Measure AQ-1 would require the project contractor(s) to implement construction emissions reduction measures, which would substantially reduce diesel particulate matter emissions as compared to the use of a standard construction equipment fleet with a mix of tiers and no alternative fuel or electric equipment. Therefore, implementation of Mitigation Measure AQ-1 would reduce TAC emissions impacts during construction to a less-than-significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

During construction activities, heavy equipment and vehicles would emit odors associated with vehicle and engine exhaust. However, these odors would be intermittent and temporary, would cease upon completion, and would disperse with distance. In addition, project construction would be required to comply with SCAQMD Rule 402, which specifies that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public. Therefore, project construction would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and impacts would be less than significant.

CARB's Air Quality and Land Use Handbook: A Community Health Perspective (2005) provides recommendations regarding the siting of new sensitive land uses near potential sources of odors (e.g., sewage treatment plants, landfills, recycling facilities, biomass operations, autobody shops, fiberglass manufacturing, and livestock operations). Residential uses are not identified on this list. In addition, solid waste generated by the proposed on-site uses would be properly stored in lidded dumpsters and/or trash cans and collected by a contracted waste hauler, ensuring that on-site waste would be managed and collected in a manner to prevent the proliferation of odors. Therefore, the Proposed Project's operational activity would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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4 Biological Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
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 Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	■	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	■	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	■	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	■	☐

A Biological Resources Assessment was prepared in June of 2024, by Carlson Strategic Land Solutions and peer reviewed by Rincon Consultants (Appendix B). The following section is partially based on the Biological Resources Assessment (BRA).

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

The Project Site is located on undeveloped land within an area of Menifee comprised primarily of residential and vacant land, and surface street features. The site is mostly barren and is routinely disked. During field reconnaissance, very little standing vegetation was observed on the Project Site. During the site visit, vegetation observed on the Project Site consisted primarily of non-native grasses. According to the BRA, the Project Site is located within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The Project Site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits.

The Proposed Project would include removal of non-native and ruderal plant species. No special status species or sensitive species were identified to occur onsite, nor were they observed onsite. The Project would include the removal of non-native and ruderal species; therefore, impacts to sensitive plant species would be less than significant.

The Project Site consists of disturbed habitat and lacks suitable nesting habitat for sensitive wildlife species. The Project Site provides limited suitable habitat for ground nesters and some common avian species. While none of the common species carry a Federal or State listing as threatened or endangered, they are all protected under the Migratory Bird Treaty Act (MBTA) during breeding. Therefore, a pre-construction survey is required in compliance with the MBTA. Implementation of Mitigation Measure BIO-1 would reduce potential impacts to the avian species to a less than significant level if nesting individuals are present.

Mitigation Measures

BIO-1 Nesting Bird Avoidance

Prior to the issuance of any grading permit that would impact potentially suitable nesting habitat for avian species, the project applicant shall adhere to the following:

1. Vegetation removal activities shall be scheduled outside the nesting season (September 1 to February 14 for songbirds; September 1 to January 14 for raptors) to the extent feasible to avoid potential impacts to nesting birds and/or ground nesters.
2. Any construction activities that occur during typical nesting season (February 15 to August 31 for songbirds; January 15 to August 31 for raptors) will require that all suitable habitat, on-site and within 300-feet surrounding the site (as feasible), be thoroughly surveyed for the presence of nesting birds by a qualified biologist before commencement ground disturbances. If active nests are identified, the biologist would establish no-work buffers around the active nest(s) (500 feet for raptors and sensitive species, 200 feet for non-raptors/nonsensitive species). All work within these buffers would be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The onsite biologist would review and verify compliance with these nesting boundaries and would verify the nesting effort has finished. Work can resume within these areas when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas and would develop a Nesting Bird Plan, which is to be submitted and approved by the City prior to any no-work buffer reduction to prevent impacts on any active nest (eggs, chicks, etc.).

Significance After Mitigation

With implementation of the mitigation measures, impacts would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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

Aerial photographs, topographic maps, soils maps, and all relevant local or regional plans, policies, and regulations of CDFW and USFWS were reviewed for signs of flowing or ponded water, topographic depressions, and drainage features. The Project site was assessed for MSHCP riparian/riverine areas and vernal pools pursuant to Section 6.1.2. Within the Project Site, roughly 0.02-acres of features exist that could potentially be considered sensitive in the MSHCP. However, after further analysis, the Project Site contains a single feature that does not meet the definition of riparian and/or riverine as outlined in MSHCP Section 6.1.2 riparian/riverine areas. The quality of the drainage is characterized as poor due to the presence of dense non-native species, bare area, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse. Thus, the Project Site does not contain suitable habitat for any of the riparian/riverine vernal pool species listed in Section 6.1.2 of the MSHCP, including listed fairy shrimp.

While the drainage feature is minor in nature and low in biological value, the impacts would likely require regulatory permits with CDFW. Nonetheless, impacts would be considered less than significant with compliance with the local MSHCP..

LESS-THAN-SIGNIFICANT IMPACT

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

The U.S. Army Corps of Engineers (USACE), under Section 404 of the Federal Clean Water Act (CWA), regulates discharges of dredged or fill materials into “waters of the United States”. These waters include wetlands and non-wetland bodies of water that meet specific criteria, including a connection to interstate or foreign commerce. The USACE typically regulates as non-wetland waters of the U.S. any body of water displaying an ordinary high-water mark (OHWM). To be considered a jurisdictional wetland under Section 404, an area must possess hydrophytic vegetation, hydric soils, and wetland hydrology. CDFW, under Sections 1600 *et seq* of the California Fish and Game Code, regulates alterations to lakes, rivers, and streams. A stream is defined by the presence of a channel bed and banks, and at least an occasional flow of water. The Regional Water Quality Control Board (RWQCB) is responsible for the administration of Section 401 of the CWA, through water quality certification of any activity that may result in a discharge to jurisdictional waters of the U.S. The RWQCB may also regulate discharges to “waters of the State” including wetlands, under the California Porter-Cologne Water Quality Control Act.

During the assessment for jurisdictional resources, a drainage ditch along the northeastern portion of the Project Site was observed. A total of 0.01 acres of the drainage ditch identified on the Project Site are subject to Section 404 under Clean Water Act, as regulated by the Corps. Although the quality of the drainage is characterized as poor, impacts to approximately 0.01 acres of Section 404 waters under the jurisdiction of the Corps would be potentially significant. To reduce potential

impacts to state protected wetlands, Mitigation Measures BIO-2, below, would be implemented. With implementation of the mitigation measure, impacts would be less than significant.

Mitigation Measures

BIO-2 permit Compliance

Prior to the issuance of any grading permit for permanent impacts in the areas designated as jurisdictional features, the applicant shall consult with the regulatory agencies to determine the required permits. Should regulatory permits be required, they shall be obtained prior to impacts to jurisdictional features.

Significance After Mitigation

With implementation of the mitigation measure, impacts would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Project Site supports potential live-in and movement habitat for species on a local scale (i.e., some limited live-in and marginal movement habitat for reptile, bird, and mammal species). However, the site provides little to no function to facilitate wildlife movement on a regional scale. Additionally, the site is not identified as a Special Linkage area within the MSHCP. Movement on a local scale likely occurs with species adapted to urban environments due to the surrounding development and disturbances in the vicinity of the site. Although implementation of the Project would result in disturbances to local wildlife movement within the site, those species adapted to urban areas would be expected to persist on-site following construction. As such, impacts related to wildlife movement would be less than significant, and no mitigation measures would be required.

The Project Site supports potential foraging habitat and limited nesting habitat for migratory birds, in addition to potential foraging habitat for raptors. Based on the disturbed nature of the site, the quality of foraging habitat is considered to be low. Therefore, impacts to foraging habitat would be considered less than significant and no mitigation measures are considered required.

The site has the potential to support avian ground nests due to the lack of vegetation and limited ground cover. Nesting activity typically occurs from February 15 to August 31. Disturbing or destroying active nests is a violation of the MBTA (16 U.S.C. 703 et seq.). In addition, nests and eggs are protected under Fish and Wildlife Code Section 3503. As such, the Proposed Project has the potential to impact avian ground nests directly or indirectly. However, implementation of Mitigation Measure BIO-1, above, would reduce impacts related to avian ground nests to less than significant.

Mitigation Measures

Mitigation Measure BIO-1 would be applicable.

Significance After Mitigation

With implementation of the mitigation measures, impacts would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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

The Proposed Project is not subject to any local policies, including a tree preservation ordinance. The Project Site does not contain any tree species and would not remove any trees. Therefore, the Proposed Project would not conflict with any local policies or ordinances protecting biological resources and no impact would occur.

NO IMPACT

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

The Project Site is within the planning area of the Western MSHCP and complies with the provisions of that. Moreover, adherence to the mitigation measures described above would ensure that potential impacts to nesting birds and jurisdictional features are reduced to less than significant levels. Additionally, the Proposed Project would not conflict with any Habitat Conservation Plan or Natural Community Conservation Plan. The Proposed Project would thus result in a less than significant impact.

LESS-THAN-SIGNIFICANT IMPACT

5 Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	■	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	■	☐	☐

The analysis below used information from the Applicant prepared Cultural Resources Assessment (CRA), attached as Appendix C, to this MND. CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC] Section 21084.1). A historical resource is (1) a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR); (2) a resource included in a local register of historical resources; and/or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (CEQA Guidelines Section 15064.5[a][1-3]). Historical resources may include eligible built environment resources and archaeological resources from any time period.

Pursuant to CEQA Guidelines Section 15064.5(a)(3), a resource is considered historically significant if it:

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

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. If it can be demonstrated that a project would 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]).

PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological 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:

1. Contains information needed to answer important scientific research questions and 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; and/or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA Guidelines Section 15064.5 also provides guidance for addressing the potential presence of human remains, including those discovered during implementation of a project.

The impact analysis included herein is organized based on the cultural resources checklist questions included in CEQA Guidelines Appendix G: Environmental Checklist Form. Checklist question a broadly refers to historical resources. To more clearly differentiate between archaeological and built environment resources, analysis under checklist question a is limited to the built environment resources. Archaeological resources, including those that may be considered historical resources pursuant to CEQA Guidelines Section 15064.5 and those that may be considered unique archaeological resources pursuant to PRC Section 21083.2, are considered under checklist question b.

This section analyzes the Proposed Project's potential impacts related to cultural resources, including historical and archaeological resources as well as human remains. The CRA investigation consisted of a California Historical Resources Information System (CHRIS) records search at the Eastern Information Center (EIC) of the Project Site as well as a 1-mile radius around the Project Site, a review of BFSA's in-house data, additional archival research, a search of the Sacred Lands File (SLF) with the Native American Heritage Commission (NAHC), and a pedestrian field survey conducted on July 1, 2022.

The EIC records search identified 18 previously recorded cultural resources within a 1-mile radius of the Project Site, none of which are located within or adjacent to the Project Site. BFSA's review of their in-house data, the National Register of Historic Places index, the historical USGS topographic map data, and historical aerial photographs for 1967, 1978, 1996, 2002, and 2005 also did not indicate the presence of cultural resources within or adjacent to the Project Site. Additionally, no archaeological resources or deposits were observed within the Project Site during the pedestrian survey conducted in support of the project. On August 15, 2022, the NAHC responded to BSFA's SLF request, stating the results of the SLF search were negative.

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No historical built environment resources were identified within or adjacent to the Project Site as a result of the analysis conducted in support of this project. As such, implementation of the project would result in no impact to historical built environment resources as defined in Section 15064.5(b) of the CEQA Guidelines.

LESS-THAN-SIGNIFICANT IMPACT

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

The CRA conducted for the Proposed Project did not identify archaeological resources or archaeological deposits within or adjacent to the Project Site and the results of the SLF search conducted by the NAHC were negative for sacred lands. A review of historical aerial imagery of the Project Site by Rincon revealed that it has been subject to ongoing disturbance as a result of agricultural activities since at least the 1960s (NETROnline 2025). Though the depth and extent of past ground disturbance is unknown and intact native soils and/or archaeological materials may be present beneath the ground surface, the results of the geotechnical reports prepared for the project (GeoTek, Inc. 2022, 2024) clearly indicate that the entire Project Site is underlain by middle to early Pleistocene alluvial fan sediments, which would have been deposited prior to the era of recorded human occupation. Due to the lack of known archaeological resources in the Project Site, the negative SLF results, previous disturbance, and the presence of Pleistocene-aged deposits, the Project Site is considered to have low sensitivity for intact subsurface archaeological resources. Still, since construction of the Proposed Project would require excavation up to depths of 5 feet, encountering unanticipated discoveries of previously unrecorded archaeological resources is possible. Impacts would be potentially significant if resources are damaged or destroyed. Accordingly, mitigation would be required to reduce potential impacts.

The implementation of Mitigation Measures CUL-1 through CUL-7 would reduce impacts to a less than significant level by ensuring that any unanticipated archaeological resources discovered during construction are evaluated and treated accordingly.

Mitigation Measures

CUL-1 Human Remains

If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resource Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within the period specified by law (24 hours). Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

CUL-2 Non-Disclosure of Location Reburials

It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or associated grave goods shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code 6254 (r).

CUL3 Inadvertent Archaeological Find

If during ground disturbance activities, unique cultural resources are discovered that were not assessed by the archaeological report(s) and/or environmental assessment conducted prior to project approval, the following procedures shall be followed. Unique cultural resources are defined,

for this condition only, as being multiple artifacts in close association with each other, but may include fewer artifacts if the area of the find is determined to be of significance due to its sacred or cultural importance as determined in consultation with the Native American Tribe(s).

a) All ground disturbance activities within 100 feet of the discovered cultural resources shall be halted until a meeting is convened between the developer, the archaeologist, the tribal representative(s) and the Community Development Director to discuss the significance of the find.

b) At the meeting, the significance of the discoveries shall be discussed and after consultation with the tribal representative(s) and the archaeologist, a decision shall be made, with the concurrence of the Community Development Director, as to the appropriate mitigation (documentation, recovery, avoidance, etc.) for the cultural resources.

c) Grading of further ground disturbance shall not resume within the area of the discovery until an agreement has been reached by all parties as to the appropriate mitigation. Work shall be allowed to continue outside of the buffer area and will be monitored by additional Tribal monitors if needed.

d) Treatment and avoidance of the newly discovered resources shall be consistent with the Cultural Resources Management Plan and Monitoring Agreements entered into with the appropriate tribes. This may include avoidance of the cultural resources through project design, in-place preservation of cultural resources located in native soils and/or re-burial on the Project property so they are not subject to further disturbance in perpetuity as identified in Non-Disclosure of Reburial Condition.

e) Pursuant to Calif. Pub. Res. Code § 21083.2(b) avoidance is the preferred method of preservation for archaeological resources and cultural resources. If the landowner and the Tribe(s) cannot agree on the significance or the mitigation for the archaeological or cultural resources, these issues will be presented to the City Community Development Director for decision. The City Community Development Director shall make the determination based on the provisions of the California Environmental Quality Act with respect to archaeological resources, recommendations of the project archeologist and shall take into account the cultural and religious principles and practices of the Tribe. Notwithstanding any other rights available under the law, the decision of the City Community Development Director shall be appealable to the City Planning Commission and/or City Council.

CUL-4 Cultural Resources Disposition

In the event that Native American cultural resources are discovered during the course of ground disturbing activities (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:

a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Menifee Community Development Department:

b) Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place where they were found with no development affecting the integrity of the resources.

c) Reburial of the resources on the Project property. The measures for reburial shall include, at least, the following: Measures and provisions to protect the future reburial area from any

future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed, with an exception that sacred items, burial goods and Native American human remains are excluded. Any reburial process shall be culturally appropriate. Listing of contents and location of the reburial shall be included in the confidential Phase IV report. The Phase IV Report shall be filed with the City under a confidential cover and not subject to Public Records Request.

d) If preservation in place or reburial is not feasible then the resources shall be curated in a culturally appropriate manner at a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines. The collection and associated records shall be transferred, including title, and are to be accompanied by payment of the fees necessary for permanent curation. Evidence of curation in the form of a letter from the curation facility stating that subject archaeological materials have been received and that all fees have been paid, shall be provided by the landowner to the City. There shall be no destructive or invasive testing on sacred items, items of Native American Cultural Patrimony, burial goods and Native American human remains. Results concerning finds of any inadvertent discoveries shall be included in the Phase IV monitoring report.

CUL-5 Archeological Retained

Prior to issuance of a grading permit the project applicant shall retain a Riverside County qualified archaeologist to monitor all ground disturbing activities in an effort to identify any unknown archaeological resources.

a) The Project Archaeologist and the Tribal monitor(s) shall manage and oversee monitoring for all initial ground disturbing activities and excavation of each portion of the project site including clearing, grubbing, tree removals, mass or rough grading, trenching, stockpiling of materials, rock crushing, structure demolition and etc. The Project Archaeologist and the Tribal monitor(s), shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources in coordination with any required special interest or tribal monitors.

b) The developer/permit holder shall submit a fully executed copy of the contract to the Community Development Department to ensure compliance with this condition of approval. Upon verification, the Community Development Department shall clear this condition.

c) In addition, the Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

d) Project grading and development scheduling;

e) The Project archeologist and the Consulting Tribes(s) shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area;

what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available

f) The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

CUL-6 Native American Monitoring (Pechanga/Soboba)

Tribal monitor(s) shall be required on-site during all ground-disturbing activities which are below the depths of the previous mass grading. The land divider/permit holder shall retain a qualified tribal monitor(s) from the Pechanga Band of Indians and Soboba band Luiseno Indians. Prior to issuance of a grading permit, the developer shall submit a copy of a signed contract between the above-mentioned Tribes and the land divider/permit holder for the monitoring of the project to the Community Development Department and to the Engineering Department. The Native American Monitor(s) shall have the authority to temporarily divert, redirect or halt the ground-disturbance activities to allow recovery of cultural resources, in coordination with the Project Archaeologist.

The Developer shall relinquish ownership of all cultural resources, including all archaeological artifacts that are of Native American origin, found in the project area for proper treatment and disposition to a curational facility that meets or exceeds Federal Curation Standards outlined in 36 CFR 79. The applicant shall be responsible for all curation costs.

CUL-7 Archaeology Report – Phase III and IV

Prior to final inspection of the first building permit associated with each phase of grading, the developer/permit holder shall prompt the Project Archaeologist to submit two copies of the Phase III Data Recovery report (if required for the Project) and the Phase IV Cultural Resources Monitoring Report that complies with the Community Development Department's requirements for such reports. The Phase IV report shall include evidence of the required cultural/historical sensitivity training for the construction staff held during the pre-grade meeting. The Community Development Department shall review the reports to determine adequate mitigation compliance. Provided the reports are adequate, the Community Development Department shall clear this condition. Once the report(s) are determined to be adequate, two copies shall be submitted to the Eastern Information Center (EIC) at the University of California Riverside (UCR) and one copy shall be submitted to the Consulting Tribe(s) Cultural Resources Department(s).

Significance After Mitigation

Implementation of Mitigation Measures CUL-1 through CUL-7 would reduce potential impacts to less than significant by ensuring any subsurface archaeological resources are identified and evaluated. Should any identified resources be identified as eligible for the CRHR, those resources would be avoided or appropriate measures, such as data recovery, would be identified on a case by case basis.

Less than Significant with Mitigation Incorporated

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

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 discovered during ground-disturbing activities, the State of California Health and Safety Code Section 7050.5 states no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to PRC 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 must notify the NAHC, which would determine and notify a Most Likely Descendent (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 City shall reinter the remains in an area of the property secure from subsequent disturbance. With adherence to existing regulations, potential impacts to human remains would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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6 Energy

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	■	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	■	☐

In 2022, California is one of the lowest per capita energy users in the United States, ranked 49th in the nation, due to its energy efficiency programs and mild climate (United States Energy Information Administration 2024a). Electricity and natural gas are primarily consumed by the built environment for lighting, appliances, heating and cooling systems, fireplaces, and other uses such as industrial processes in addition to being consumed by alternative fuel vehicles. Most of California's electricity is generated in state with approximately 23 percent imported from the Northwest and Southwest in 2023; however, the state relies on out-of-state natural gas imports for nearly 90 percent of its supply (California Energy Commission [CEC] 2024a and 2024b). In addition, approximately 57.9 percent of California's electricity supply in 2023 came from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (CEC 2024a). In 2022, Senate Bill 1020 (SB 1020) creates clean electricity targets for eligible renewable energy resources and zero-carbon resources to supply 90 percent of retail sale electricity by 2035, 95 percent by 2040, 100 percent by 2045, and 100 percent of electricity procured to serve all state agencies by 2035.

Electricity would be provided to the project by Southern California Edison (SCE). Table 8 summarizes the electricity consumption for Riverside County, in which the Project Site would be located, and for SCE, as compared to statewide consumption. Natural gas would not be consumed at the Project Site; therefore, it is excluded from the analysis.

Table 8 2022 Electricity Consumption

Energy Type	Riverside County	SCE	California	Proportion SCE Consumption[1,2]	Proportion of County Consumption[1,2]
Electricity (GWh)	17,781	85,870	287,826	30%	6%

GWh = gigawatt-hours

[1] Proportion to statewide consumption.

[2] SCE electricity consumption compared to statewide consumption.

[3] For reference, the population of Riverside County (2,442,378 persons) is approximately 6.2 percent of the population of California (39,128,162 persons) (California Department of Finance 2024).

Source: CEC 2024c

Petroleum fuels are primarily consumed by on-road and off-road equipment in addition to some industrial processes, with California being the 7th largest petroleum-producing state in the nation in 2023 (United States Energy Information Administration 2024b). Gasoline, which is used by light-duty cars, pickup trucks, and sport utility vehicles, is the most used transportation fuel in California with 13,576 million gallons sold in 2023 (CEC 2024d). Diesel, which is used primarily by heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles, is the second most used fuel in California with 2,316 million gallons sold in 2023 (CEC 2024d). Table 9 summarizes the petroleum fuel consumption for Riverside County, in which the Project Site would be located, as compared to statewide consumption.

Table 9 2023 Annual Gasoline and Diesel Consumption

Fuel Type	Riverside County (million gallons)	California (million gallons)	Proportion of Statewide Consumption[1]
Gasoline	980	13,576	7%
Diesel	180	2,316	8%

[1] For reference, the population of Riverside County (2,442,378 persons) is approximately 6.2 percent of the population of California (39,128,162 persons) (California Department of Finance 2024).

Source: CEC 2024d

Energy consumption is related to environmental quality in that the consumption of nonrenewable energy resources releases criteria air pollutant and greenhouse gas (GHG) emissions into the atmosphere. The environmental impacts of air pollutant and GHG emissions associated with the project's energy consumption are discussed in detail in Section 3 and Section 6, of this MND.

a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

During Proposed Project construction, energy would be consumed in the form of petroleum-based fuels used to power off-road construction vehicles and equipment on the Project Site, construction workers travel to and from the Project Site, and vehicles used to deliver materials. In addition, the project would require hauling material offsite during grading; vendor trips during building construction; and worker trips for all phases of construction, such as site preparation, grading, paving, building construction, and architectural coating.

The total gasoline and diesel fuel consumption during project construction was estimated using the assumptions and factors from CalEEMod used to estimate construction air emissions (Appendix A). Table 10 presents the estimated construction phase energy consumption, indicating construction equipment and hauling and vendor trips would consume 74,093 gallons of diesel fuel, and worker trips would consume about 24,284 gallons of gasoline fuel over the project construction period. The project would consume less than one hundredth of a percent of the total consumption in the Riverside County region.

Table 10 Estimated Fuel Consumption during Construction

Fuel Type	Gallons of Fuel	MMBtu
Diesel Fuel (Construction Equipment)	67,699	8,629
Diesel Fuel (Hauling & Vendor Trips)	6,396	815
Other Petroleum Fuel (Worker Trips)	24,284	2,666
Total		**12,110**

The construction energy estimates represent a conservative estimate as the construction equipment used in each construction phase was assumed to operate every day of construction. Construction equipment would be maintained to applicable standards, and construction activity and associated fuel consumption and energy use would be temporary and typical for construction sites. It is reasonable to assume contractors would avoid wasteful, inefficient, and unnecessary fuel consumption during construction to reduce construction costs. Therefore, the project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction and impacts would be less than significant.

Operations

Operation of the Proposed Project would contribute to regional energy demand by consuming electricity and gasoline and diesel fuels. Electricity would be used for heating and cooling systems, lighting, appliances, and water and wastewater conveyance, among other purposes. Gasoline and diesel consumption would be associated with vehicle trips generated by customers and employees. Table 11 summarizes estimated operational energy consumption for the Proposed Project. As shown therein, project operation would require approximately 143,937 gallons of gasoline and 33,677 gallons of diesel for transportation fuels and 1.8 GWh of electricity. Vehicle trips associated with future workers, customers, and deliveries would represent the greatest operational use of energy associated with the Proposed Project.

Table 11 Estimated Project Annual Operational Energy Consumption

Source	Energy Consumption[1]	Energy Consumption[1]
Transportation Fuels		
Gasoline	143,937 gallons	15,803 MMBtu
Diesel	33,677 gallons	4,292 MMBtu
Electricity	1.8 GWh	6,272 MMBtu

MMBtu = million metric British thermal units; GWh = gigawatt-hours

[1] Energy consumption is converted to MMBtu for each source

As mentioned, the Proposed Project would be served by SCE, which provided more than 85,870 GWh of electricity in 2022. The Proposed Project's total electricity demand would be less than 0.01 percent of SCE's projected low demand supply of 100,313 GWh in 2027 (CEC 2024e). Additionally, the project would also comply with California Building Code (CBC) Title 24 standards, which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources during operation**.** California's Green Building Standards Code (CALGreen; California Code of Regulations, Title 24, Part 11) requires implementation of energy efficient light fixtures and building materials

into the design of new construction projects. The 2022 Building Energy Efficiency Standards (CBC Title 24, Part 6) requires newly constructed buildings to meet energy performance standards set by the Energy Commission. In addition, the Proposed Project would be required to comply with the applicable portions of the California Energy Code and California Green Building Standards Code (CALGreen Code), which establish planning and design standards for sustainable development, energy efficiency, water conservation, and material conservation. By required compliance with applicable regulations and continued energy efficient programs implemented by SCE, the Proposed Project's potential impacts regarding wasteful or inefficient use of electricity would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The City of Menifee General Plan outlines policies to promote energy efficiency and generation within Menifee. The Open Space and Conservation Element include the goal OSC-4, Energy & Mineral, which promotes efficient and management of energy to ensure its availability for future generations. Policies within the Open Space and Conservation Element such as Policy OCS-4.1, Policy OCS-4.2, and Policy OCS-9.5 are intended to increase energy efficiency. The project would provide electric vehicle charging spaces standards based on the latest CALGreen standards for new construction of townhomes with private garages. In addition, the project would reduce its use of nonrenewable energy resources by excluding natural gas appliances and electricity would be provided by SCE, which continues to increase renewable energy sources to comply with state requirements of SB 100.

With regard to transportation related energy usage, the Proposed Project would not conflict with the goals of SCAG's 2024–2050 RTP/SCS, which incorporates VMT targets established by SB 375. SCAG's 2024–2050 RTP/SCS focuses on four core categories: mobility, communities, environment and economy. In addition, the SCS implementation strategies include focusing growth near destinations and mobility options, promoting diverse housing choices, leveraging technology innovations, and supporting implementation of sustainability policies. The Proposed Project would be consistent with the energy efficiency policies by being consistent with the CALGreen and Building Energy Efficiency Standards for appliances and electric vehicle charging provisions. In addition, the project is near existing residential neighborhoods providing connectivity with the existing land use area, which could reduce reliance of motor vehicle use. Therefore, the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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7 Geology and Soils

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. 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?	☐	☐	■	☐
2. Strong seismic ground shaking?	☐	☐	■	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
4. Landslides?	☐	☐	☐	■
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	■	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	■	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	■	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	■	☐	☐

This analysis incorporates the results provided in the Paleontological Resources Assessment (PRA) prepared in July 2022 for the Proposed Project, by Brian F. Smith and Associates, Inc. and peer reviewed by Rincon Consultants (Appendix D) and the Geotechnical and Infiltration Evaluation prepared by GeoTek on January 4, 2022 (Appendix E).

a.1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving 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?

Although the Project Site is located in seismically active Southern California, it is not located within an Alquist-Priolo Earthquake Fault Zone (DOC 2023). The nearest active faults are the Casa Loma Fault of the San Jacinto Fault Zone located approximately 10 miles northeast of the Project Site and the Wildomar Fault of the Elsinore Fault Zone located approximately 10.6 miles southwest of the Project Site. Therefore, impacts would be less than significant with no mitigation required.

LESS-THAN-SIGNIFICANT IMPACT

a.2. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

The Proposed Project would be subject to ground shaking impacts should a major earthquake in the area occur in the future. Potential impacts include injury or loss of life and property damage. The Project Site is subject to strong seismic ground shaking as are virtually all properties in Southern California.

The proposed buildings are subject to the seismic design criteria of the California Building Code (CBC). The 2022 CBC (CBC, California Code of Regulations, Title 24, Part 2) contains seismic safety provisions with the aim of preventing building collapse during a design earthquake, so that occupants would be able to evacuate after the earthquake. Adherence to these requirements would reduce the potential of the building from collapsing during an earthquake, thereby minimizing injury and loss of life. Although structures may be damaged during earthquakes, adherence to seismic design requirements would minimize damage to property within the structure because the structure is designed not to collapse. The CBC is intended to provide minimum requirements to prevent major structural failure and loss of life. Adherence to existing regulations would reduce the risk of loss, injury, and death; impacts due to strong ground shaking would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.3. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Liquefaction is a phenomenon that occurs when soil undergoes transformation from a solid state to a liquefied condition due to the effects of increased pore-water pressure. This typically occurs where susceptible soils (particularly the medium sand to silt range) are located over a high groundwater table (within 50 feet of the surface). Affected soils lose all strength during liquefaction and foundation failure can occur.

According to the California Department of Conservation Seismic Hazard Evaluation system and the Menifee General Plan Safety Element, the Project Site is not located in a Zone of Required Investigation for liquefaction (DOC 2023; Menifee 2022). This indicates that the area has not been subject to historic occurrence of liquefaction, or local geological, geotechnical, and groundwater

conditions do not indicate potential for permanent ground displacement such that mitigation as defined in Public Resources Code Section 2693(c) would be required. Therefore, impacts from seismically induced liquefaction would be considered less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.4. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

According to the California Department of Conservation Seismic Hazard Evaluation system and the Menifee General Plan Safety Element, the Project Site is not located in a Zone of Required Investigation for landslides (DOC 2023; Menifee 2022). The Project Site is relatively flat and there is no potential for landslides on the Project Site. No impacts to the Proposed Project Site from landslides would occur.

NO IMPACT

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

Topsoil is used to cover surface areas for the establishment and maintenance of vegetation due to its high concentrations of organic matter and microorganisms. The Proposed Project has the potential to expose surficial soils to wind and water erosion during construction activities. Wind erosion would be minimized through soil stabilization measures required by South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust), such as daily watering. Water erosion would be prevented through the City's standard erosion control practices required pursuant to the CBC and the National Pollution Discharge Elimination System (NPDES), such as silt fencing, fiber rolls, or sandbags. Following construction, the Project Site would be covered completely by paving, structures, and landscaping. Impacts related to soil erosion would be less than significant with the implementation of existing regulations.

LESS-THAN-SIGNIFICANT IMPACT

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

Impacts related to liquefaction and landslides are discussed above. Lateral spreading is the downslope movement of surface sediment due to liquefaction in a subsurface layer. The downslope movement is due to gravity and earthquake shaking combined. Such movement can occur on slope gradients of as little as one degree. Lateral spreading typically damages pipelines, utilities, bridges, and structures.

Due to the very low potential for liquefaction, the potential for lateral spreading is also considered very low. Lateral spreading of the ground surface during a seismic activity usually occurs along the weak shear zones within a liquefiable soil layer and has been observed to generally take place toward a free face (i.e. retaining wall, slope, or channel) and to lesser extent on ground surfaces with a very gentle slope. Furthermore, the Proposed Project is required to be constructed in accordance with the CBC. Therefore, through compliance with CBC requirements, impacts related to unstable soils would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

Expansive soils are clayey soils that have a high plasticity index. Typical shallow reinforced concrete spread footing foundations, such as those for buildings and other foundations covering a considerable area of ground, can be affected by expansive soils if such soils are present close to the ground surface. The Proposed Project is located on well-dissected, well-indurated sand and gravel alluvial fan sediment. Additionally, if expansive soils are discovered on the Project Site, Section 1808.6 of the CBC requires special design considerations for foundations of structures built on expansive soils which would reduce the Project Site's risk of expansive soil damage. With the project's adherence to CBC design considerations, impacts related to expansive soils would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

Wastewater generated by the Proposed Project would require conveyance through a municipal sewage system and would not utilize a septic system. Therefore, the Project would not have an impact on soils incapable of adequately supporting the use of septic tanks. No impact would occur.

NO IMPACT

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). Paleontological resources are not found in "soil" but are contained within the geologic deposits or bedrock that underlies the soil layer. Typically, fossils are greater than 5,000 years old (i.e., older than middle Holocene in age) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP] 2010). Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on several factors. It is possible to evaluate the potential for geologic units to contain scientifically important paleontological resources and therefore evaluate the potential for impacts to those resources and provide mitigation for paleontological resources if they are discovered during construction of a development project.

A PRA was prepared for this project in 2022 by Brian F. Smith and Associates, Inc. (BFSA 2022). This assessment included a summary of applicable state and local laws and regulations, a paleontological sensitivity assessment of the Project Site's geology, a paleontological records search of the Western Science Center, and mitigation recommendations. The results of that assessment are incorporated herein. This section also includes information from the Proposed Project's geotechnical evaluations (GeoTek, Inc. 2022, 2024), which were not available during the writing of BFSA (2022).

According to BFSA (2022), the entire Project Site is underlain by middle to early Pleistocene very old alluvial fan sediments, which have high paleontological sensitivity per the City of Menifee General Plan based on the history of similar sediments in the region producing fossils. Test borings

conducted by GeoTek, Inc. (2022) revealed that sediments beneath the Project Site consisted of interbedded sand, silt, and clay from the surface to the maximum explored depth of 51 feet, which is consistent with the description of very old alluvial fan sediments from BFSA (2022). These test borings did not encounter any fill or disturbed sediments.

Given the high paleontological sensitivity of the underlying sediments, BFSA (2022) concluded that project construction could significantly impact paleontological resources. Thus, BFSA (2022) recommended mitigation actions, which have been adapted into Mitigation Measure GEO-1 below. BFSA (2022) recommended paleontological monitoring for ground-disturbing activities greater than 5 feet below the surface. However, given the high sensitivity of these sediments per the City of Menifee General Plan and lack of previous disturbance of the site as documented by GeoTek, Inc. (2022), any ground-disturbing activities could significantly impact paleontological resources. Therefore, Mitigation Measure GEO-1 includes paleontological monitoring for ground-disturbing activities of any depth. Implementation of Mitigation Measure GEO-1 would reduce the project's potential impacts to paleontological resources to a less than significant level.

Mitigation Measure

GEO-1 Paleontological Resources Monitoring and Mitigation

Qualified Professional Paleontologist. Prior to excavation, the Proposed Project applicant shall retain a Qualified Professional Paleontologist, as defined by the Society of Vertebrate Paleontology (SVP 2010), who shall direct all mitigation measures related to paleontological resources. The Qualified Professional Paleontologist shall obtain a written repository agreement for the curation of any fossils discovered during paleontological monitoring prior to the beginning of ground disturbance.

Paleontological Worker Environmental Awareness Program. Prior to the start of construction, the Qualified Professional Paleontologist or their designee shall conduct a paleontological Worker Environmental Awareness Program (WEAP) training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should construction personnel discover fossils.

Paleontological Monitoring and Salvage. Full-time paleontological monitoring shall be conducted during ground-disturbing construction activities (e.g., grading, trenching, drilling) within previously undisturbed sediments. Paleontological monitoring shall be conducted by a paleontological monitor with experience with collection and salvage of paleontological resources and who meets the minimum standards of the SVP (2010) for a Paleontological Resources Monitor. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. The Qualified Professional Paleontologist may recommend that monitoring be reduced in frequency or ceased entirely based on geologic observations. Such decisions shall be subject to review and approval by the City of Menifee.

Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from one to several five-gallon buckets of fossiliferous sediment. If it is possible to dry screen the sediment in the field, a concentrated sample may consist of one or two buckets of material. For vertebrate fossils, the test is usually the observed presence of small pieces of bones within the sediments. If present, as multiple five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.

In the event of a fossil discovery by the paleontological monitor or construction personnel, all construction activity within 50 feet of the find shall cease, and the Qualified Professional Paleontologist shall evaluate the find. If the fossil(s) is (are) not scientifically significant, then construction activity may resume. If it is determined that the fossil(s) is (are) scientifically significant, the following shall be completed:

- **Fossil Salvage.** The paleontological monitor shall salvage (excavate and recover) the fossil to protect it from damage/destruction. Typically, fossils can be safely salvaged quickly by a single paleontological monitor with minimal disruption to construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In these cases, a fossil recovery crew shall excavate around the find, encase the find within a plaster and burlap jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment may be solicited to help remove the jacket to a safe location.
- **Fossil Preparation and Curation**. Fossils shall be identified to the lowest (most-specific) possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Qualified Professional Paleontologist.

Final Paleontological Mitigation Report. Upon completion of ground-disturbing activities (or laboratory preparation and curation of fossils, if necessary), the Qualified Professional Paleontologist shall prepare a final report describing the results of the paleontological monitoring efforts. The report shall include a summary of the field and laboratory methods employed; an overview of project geology; and, if fossils were discovered, an analysis of the fossils, including physical description, taxonomic identification, scientific significance and necessary maps and graphics to accurately record their original location(s). The report shall be submitted to the City of Menifee and, if fossil curation occurred, the designated scientific institution.

Significance After Mitigation

With implementation of the mitigation measures, impacts would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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8 Greenhouse Gas Emissions

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

Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of Greenhouse Gases (GHG) emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. The majority of radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and from of human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of a specific GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change [IPCC] 2021).

The United Nations IPCC expressed that the rise and continued growth of atmospheric CO_2 concentrations is unequivocally due to human activities in the IPCC's Sixth Assessment Report (2021). Human influence has warmed the atmosphere, ocean, and land, which has led the climate to warm at an unprecedented rate in the last 2,000 years. It is estimated that between the period of 1850 through 2019, that a total of 2,390 gigatons of anthropogenic CO_2 was emitted. It is likely that anthropogenic activities have increased the global surface temperature by approximately 1.07

degrees Celsius between the years 2010 through 2019 (IPCC 2021). Emissions resulting from human activities are thereby contributing to an average increase in Earth's temperature. Potential climate change impacts in California may include loss of snowpack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (California Natural Resource Agency 2019).

Significance Thresholds

Based on Appendix G of the CEQA Guidelines, impacts related to GHG emissions from the project would be significant if the project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The majority of individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute incrementally to significant cumulative effects, even if individual changes resulting from a project are limited. As a result, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be 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 15064[h][1]).

To determine a project-specific threshold, guidance on GHG significance thresholds in the region from SCAQMD, the air district in which the Project Site is located, was used. The SCAQMD's GHG CEQA Significance Threshold Working Group considered a tiered approach to determine the significance of residential and commercial projects. The draft tiered approach is outlined in meeting minutes dated September 28, 2010 (SCAQMD 2010):

- **Tier 1.** If the project is exempt from further environmental analysis under existing statutory or categorical exemptions, there is a presumption of less than significant impacts with respect to climate change. If not, then the Tier 2 threshold should be considered.
- **Tier 2.** Consists of determining whether the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. The concept embodied in this tier is equivalent to the existing concept of consistency in CEQA Guidelines Section 15064(h)(3), 15125(d) or 15152(a). Under this Tier, if the Proposed Project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. If there is not an adopted plan, then a Tier 3 approach would be appropriate.
- **Tier 3.** Establishes a screening significance threshold level to determine significance. The Working Group has provided a recommendation of 3,000 metric tons (MT) CO_2e per year for nonindustrial projects.
- **Tier 4.** Establishes a service population threshold to determine significance. The Working Group has provided a recommendation of 4.8 MT CO_2e per year for land use projects.

Tier 1 would not apply to the project as it is not exempt from environmental analysis. For Tier 2, the City of Menifee does not have a qualified GHG reduction plan in its general plan or climate adaptation plan. Therefore, for a project-specific threshold, the City of Menifee has selected SCAQMD's 3,000 MT CO_2e per year threshold for nonindustrial projects as the applicable project-

specific threshold, in accordance with Tier 3. The SCAQMD's 3,000 MT CO2e per year threshold is frequently used by jurisdictions across Southern California to determine GHG emissions impacts from nonindustrial projects. In addition, the project is evaluated based on consistency with plans and policies adopted for the purposes of reducing GHG emissions and mitigating the effects of climate change. The most directly applicable adopted regulatory plans to reduce GHG emissions are the 2022 Scoping Plan, the 2024-2050 RTP/SCS, and the City of Menifee General Plan.

Methodology

Calculations of CO_2, methane, and nitrous oxide emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, methane, and nitrous oxide because these make up 98 percent of all GHG emissions by volume and are the GHG emissions the project would emit in the largest quantities (IPCC 2014). Emissions of all GHGs are converted into their equivalent GWP in terms of CO_2 (i.e., CO_2e). Minimal amounts of other GHGs (such as chlorofluorocarbons) would be emitted; however, these other GHG emissions would not substantially add to the total GHG emissions. GHG emissions associated with project construction and operation were estimated using CalEEMod, version 2022.1, with the assumptions described under Section 3, in addition to the following:

- The analysis uses CalEEMod default assumptions for solid waste and area sources for the multifamily units and asphalt surfaces.
- The project would not include natural gas appliances. The CalEEMod defaults for natural gas (kilo British Thermal Units) were converted to electricity (kilowatt hours) and summed with electricity default assumptions.
- In accordance with SCAQMD's recommendation, GHG emissions from construction of the Proposed Project were amortized over a 30-year period and added to annual operational emissions to determine the project's total annual GHG emissions (SCAQMD 2008).

a. Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction of the Proposed Project would generate temporary GHG emissions primarily from the operation of construction equipment on-site as well as from vehicles transporting construction workers to and from the Project Site and heavy trucks to transport building materials. Project construction would begin in February 2026 and end in February 2027. As shown in Table 12, construction of the Proposed Project would generate an estimated total of 908 MT CO_2e. Amortized over a 30-year period per SCAQMD guidance, construction of the Proposed Project would generate an estimated 30 MT CO_2e per year.

Table 12 Estimated Construction Emissions of Greenhouse Gases

Construction	Project Emissions MT CO_2e
2026	852
2027	56
Total	**908**
Amortized over 30 Years	**30**

MT CO_2e = metric tons of carbon dioxide equivalent
Source: Appendix A

Operation of the Proposed Project would generate GHG emissions associated with mobile sources, area sources, refrigerant sources, energy and water usage, and wastewater and solid waste generation. Table 13 combines the estimated construction and operational GHG emissions associated with development of the project. As shown therein, annual emissions from the Proposed Project would be approximately 1,573 MT of CO_2e per year, which would not exceed SCAQMD's screening-level threshold of 3,000 MT of CO_2e per year for nonindustrial projects. Therefore, the project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment and impacts would be less than significant.

Table 13 Combined Annual Emissions of Greenhouse Gases

Emission Source	Annual Emissions (MT CO_2e)
Construction[1]	**30**
Operational	**1,543**
Mobile	1,205
Area	2
Energy	290
Water	14
Waste	30
Refrigerant	<1
Total	**1,573**
SCAQMD Numeric Threshold	3,000
Exceed Threshold?	**No**

MT CO2e = metric tons of carbon dioxide equivalent
[1]Amortized construction related GHG emissions over 30 years
Source: Appendix A

LESS THAN SIGNIFICANT IMPACT

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

Several plans and policies have been adopted to reduce GHG emissions in Southern California region, including the State's 2022 Scoping Plan, the SCAG's 2024-2050 RTP/SCS, and the City of

Menifee's General Plan. The Proposed Project's consistency with these plans is discussed in the following subsections.

2022 Scoping Plan

The principal state plan to monitor and regulate GHGs is the AB 32, the California Global Warming Solutions Act of 2006, which was followed by SB 32. The quantitative goal of AB 32 was to reduce GHG emissions to 1990 levels by 2020. According to CARB, California achieved its 2020 GHG emission reduction target in 2016. The goal of SB 32 is to reduce GHG emissions to 40 percent below 1990 levels by 2030. In 2022, the State passed AB 1279, which declares the State would achieve net-zero GHG emissions by 2045 and would reduce GHG emissions by 85 percent below 1990 levels by 2045. The latest iteration of the Scoping Plan is the 2022 Scoping Plan, which focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the state's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The 2022 Scoping Plan Appendix D, Local Actions, provides suggestions (also referred to as "priority areas") for prioritizing the various types of project features that may reduce GHG emissions, starting with on-site GHG-reducing design features and mitigation measures, such as methods to reduce VMT and support building decarbonization, access to shared mobility services or transit, and EV charging. The 2022 Scoping Plan VMT Reduction priority area focuses on projects that do not result in the loss or conversion of natural and working lands. The Project Site is not considered a natural working land and would be consistent with this priority area. The 2022 Scoping Plan Building Decarbonization priority area focuses on projects that utilize all-electric appliances without any natural gas connections or other fossil fuels for space heating, water heating, or indoor cooking. The Proposed Project aligns with the Building Decarbonization priority area by installing all-electric appliances in the residential units; therefore, consistent with this priority area. In addition to the key attributes outlined for each priority area in Appendix D of the 2022 Scoping Plan, the project would include electric vehicle infrastructure. These additions would comply with the latest CALGreen standards and Title 24 Green Building Code and Building Efficiency Energy Standards, thereby reducing the use of nonrenewable energy sources and supporting the State's carbon neutrality goals. In addition, the project would receive electricity from SCE, which is required to reduce GHG emissions by increasing procurement from eligible renewable energy by set target years. Therefore, the Proposed Project would not conflict with the 2022 Scoping Plan.

SCAG's 2024-2050 RTP/SCS

On April 4, 2024, SCAG's Regional Council formally adopted the 2024-2050 RTP/SCS (titled Connect SoCal 2024). The SCAG 2024-2050 RTP/SCS is forecast to help California reach its GHG reduction goals by reducing GHG emissions from passenger cars in the SCAG region by 19 percent by 2035 in accordance with the most recent CARB targets adopted in March 2018.[3] The 2024-2050 RTP/SCS focuses on four core categories: mobility, communities, environment and economy. In addition, the SCS implementation strategies include focusing growth near destinations and mobility options, promoting diverse housing choices, leveraging technology innovations, and supporting implementation of sustainability policies. The project's consistency with the 2024-2050 RTP/SCS is

3 Eight percent emissions reduction from 2005 levels by 2020 target was achieved (SCAG 2024).

discussed in Table 14. As shown therein, the Proposed Project would not conflict with the 2024-2050 RTP/SCS.

Table 14 Project Consistency with Applicable SCAG RTP/SCS Strategies

Reduction Strategy	Project Consistency
Mobility ▪ Pursue the development of Complete Streets that comprise a safe, multimodal network with flexible use of public rights-of-way for people of all ages and abilities using a variety of modes (e.g., people walking, biking, rolling, driving, taking transit).	**Consistent.** The Proposed Project would add 132 residential units and would provide connectively with several residential neighborhoods and Hans Middle School, which could potentially promote walking, biking, and rolling near the Project Site. Therefore, the project would provide safe, multimodal network with flexible use of public rights of way.
Environment ▪ Support communities across the region to advance innovative sustainable development practices. ▪ Support investments that reduce hazardous air pollutants and greenhouse gas emissions. ▪ Accelerate the deployment of a zero-emission transportation system and use near-zero-emission technology to offer short-term benefits where zero-emissions solutions are not yet feasible or commercially viable ▪ Promote sustainable water use planning, practices and storage that improve regional water security and resilience in a drier environment.	**Consistent.** The project would be consistent with the provisions of the Title 24 Building Energy Efficiency Standards and install energy efficient appliances. The project would also adhere to CALGreen's mandatory EV charging standards for new construction of townhomes with private garages. Furthermore, it would include irrigation systems, appliances, and reclaim water that are designed to conserve water and ensure efficiency. Therefore, the project aligns with SCAG's 2024-2050 RTP environmental policies and strategies aimed at reducing GHG emissions.

Source: SCAG 2024

City of Menifee General Plan

Senate Bill 379 requires all cities to include climate adaptation and resiliency strategies in their General Plan Safety Element. The goals, policies, and objectives of this section are derived from a climate vulnerability assessment, which identifies the exposure risks; sensitive structures, functions, and populations; potential impacts and risks; and the City's adaptive capabilities. The City of Menifee's General Plan Open Space and Conservation Element includes GHG goals and policies; as well emissions reduction consideration in the Land Use and Circulation Elements through policies that encourage local jobs and housing balance, improving the transportation network, and uses of neighborhood electric vehicles. Table 15 summarizes the project's consistency with the City of Menifee General Plan goals and policies indirectly related to GHG emissions.

Table 15 Project Consistency with the City of Menifee General Plan

Policy	Consistency
Policy S-7.1: Continue to require environmental analysis for Proposed Projects which may produce harmful levels of greenhouse gas.	**Consistent.** GHG emissions generated by the Proposed Project would be significant if SCAQMD's 3,000 MT CO_2e per year threshold for non-industrial projects are exceeded. As shown in Impact GHG-1, the project would not exceed SCAQMD's GHG threshold and would not produce harmful level of GHG.
Policy S-7.2: Ensure that the City's water supply is protected against drought conditions intensified by climate change. **Policy OCS-7.2:** Encourage water conservation as a means of preserving water resources	**Consistent.** The Proposed Project would be consistent with the 2022 CALGreen standards and incorporate water efficient appliances, fixtures, and irrigation systems consistent with green building features. Additionally, reclaim water for indoor and outdoor water use.
Policy S-7.4: Promote alternative forms of energy production such as solar or wind power. **Policy OCS-4.1:** Apply energy efficiency and conservation practices in land use, transportation demand management, and subdivision and building design.	**Consistent.** The Proposed Project would comply with the latest Title 24 standards, which promote energy conservation in new buildings. Additionally, the project would be consistent with CALGreen's electric vehicle charging requirements for new construction of townhomes with private garages.

Source: City of Menifee 2012

In summary, the plan consistency analysis provided above demonstrates that the project complies with or exceeds the plans, policies, regulations and GHG reduction actions/strategies outlined in the 2022 Scoping Plan, the 2024-2050 RTP/SCS, and the City of Menifee General Plan. Consistency with the above plans, policies, regulations and GHG reduction actions/strategies would reduce the project's incremental contribution of GHG emissions. Therefore, the Proposed Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	■	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	■	☐
d. Be located on a site that is included on a list of hazardous material 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?	☐	☐	☐	■
e. For a project located in 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?	☐	☐	☐	■
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	■	☐

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

The Proposed Project could result in a significant hazard to the public if the Proposed Project includes the routine transport, use, or disposal of hazardous materials or places housing near a facility which routinely transports, uses, or disposes of hazardous materials. The Proposed Project is located within a residential and mixed-use zoned area that contains a mix of housing and vacant land. The routine use, transport, or disposal of hazardous materials is primarily associated with industrial uses that require such materials for manufacturing operations or produce hazardous wastes as by-products of production applications.

During construction, there would be a minor level of transport, use, and disposal of hazardous materials and waste that are typical of construction projects. This would include fuels and lubricants for construction machinery, coating materials, etc. Routine construction control measures and best management practices for hazardous materials storage, application, waste disposal, accident prevention and clean-up, etc. would be sufficient to reduce potential impacts to a less than significant level.

Operation and maintenance of the Proposed Project would likely involve the use of common household materials such as cleaning and degreasing solvents, fertilizers, and pesticides. In addition, chemicals, such as chlorine, for the maintenance of the pool would also potentially be stored on site in minor quantities. These and other materials used in the regular maintenance of the building and landscaping would also be utilized in the secondary activities associated with the new multi-family development. Use of these materials would be subject to compliance with existing regulations, standards, and guidelines established by the federal, State, and local agencies related to storage, use, and disposal of hazardous materials. The transport, use, and storage of hazardous materials during construction of the project would be subject to all applicable State and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, the California Hazardous Material Management Act, and the California Code of Regulations, Title 22. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

The Proposed Project would involve the construction of residential dwellings that typically do not use or store large quantities of hazardous materials. Potentially hazardous materials such as fuels, lubricants, and solvents would be used during construction of the project. However, the transport, use, and storage of hazardous materials during the construction of the project would be conducted in accordance with all applicable state and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, the California Hazardous Material Management Act, and the California Code of Regulations, Title 22. As described above, the Proposed Project would likely involve the storing of hazardous materials like pool chemicals. However, any pool chemicals stored would be in minor quantities. Impacts from project construction and operation would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

The Project Site is not located within a quarter mile of any schools. The closest school is Hans Middle School, located approximately 0.38 miles east of the Project Site. During construction of the project, hazardous and potentially hazardous materials would be utilized for the transport and operation of vehicles and machinery. As discussed above, the transport, use, and storage of hazardous materials during the construction of the project would be conducted in accordance with all applicable state and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, the California Hazardous Material Management Act, and the California Code of Regulations, Title 22. Additionally, operation of the proposed residential project would not involve the use or transport of large quantities of hazardous materials. Therefore, impacts related to hazardous emissions or materials affecting local schools would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project be located on a site that is included on a list of hazardous material 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?

Government Code Section 65962.5 requires the California Environmental Protection Agency to develop an updated Cortese List. The California Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. The analysis for this section included a review of the following resources to provide hazardous material and release information:

- SWRCB GeoTracker database
- DTSC EnviroStor database

According to the GeoTracker and EnviroStor databases, there are no leaking underground storage tank (LUST) or other clean-up sites within 0.25 mile of the Project Site (DTSC 2023; SWRCB 2023). Therefore, the project is not located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public or the environment. Thus, no impact would occur.

NO IMPACT

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

There are no public airports or private airstrips within two miles of the Project Site. The Perris Valley Airport is located approximately 3.6 miles northwest of the Project Site. The entire Project Site is located in a compatibility zone (Zone E) for the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (ALUCP). Compatibility Zone E is defined as a low noise impact zone and a low risk level zone (Riverside County Airport Land Use Commission 2014). Within Compatibility Zone E, residential use is not limited or restricted, no special considerations are required for development, and no open space requirements are enforced. Development within Compatibility Zone E is required to disclose airport proximity and the existence of aircraft overflights. The Proposed Project would

comply with the requirements of the ALUCP and would not result in a safety hazard or excessive noise. Therefore, no impact would occur.

NO IMPACT

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

The Proposed Project consists of the development of multi-family residential dwelling units. All Proposed Project elements, including landscaping, would be sited with sufficient clearance from the proposed buildings so as not to interfere with emergency access to and evacuation from the Project Site. The Proposed Project is required to comply with the California Fire Code as adopted by the Menifee Municipal Code. Primary access to the site is provided via Tioga Lane and secondary access provided via Chambers Avenue. All drives within this subdivision are proposed to be public.

The Proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan because no permanent public street or lane closures are proposed. Impacts related to emergency response plans and emergency evacuation plans would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

As discussed in Section 20, Wildfire, the Project Site and surrounding area is located within a local responsibility area identified as a Very High Fire Severity Zone and shall comply with Chapter 7A of the California Building Code and Chapter 49 of the California Fire Code. This project is also required to comply with Title 14 from the California Board of Forestry and Fire Protection. Overall compliance with the California Fire Code and local regulations including the City of Menifee Municipal Code Chapter 8.20 would reduce potential impacts related to wildland fires. As discussed in Section 20, Wildfire, the Proposed Project would not result in increased wildfire risks at the site or lead to risk of loss injury or death involving wildland fires. Therefore, impacts related to wildland fires would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

10 Hydrology and Water Quality

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

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

A project normally would have an impact on surface water quality if discharges associated with the project would create pollution, contamination, or nuisance as defined in Water Code Section 13050, or that cause regulatory standards to be violated as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for a receiving water body. For the purpose of this specific issue, a significant impact could occur if the Proposed Project would discharge water that does not meet the quality standards of the agencies which regulate surface water quality and water discharge into stormwater drainage systems. Significant impacts could also occur if the Proposed Project does not comply with all applicable regulations regarding surface water quality as governed by the SWRCB. These regulations include preparation of a WQMP to reduce potential post-construction water quality impacts.

Three general sources of potential short-term, construction-related stormwater pollution associated with the Proposed Project include: 1) the handling, storage, and disposal of construction materials containing pollutants; 2) the maintenance and operation of construction equipment; and 3) earth moving activities which, when not controlled, may generate soil erosion via storm runoff or mechanical equipment. The Proposed Project would disturb approximately 7.34 acres of land and therefore would be subject to NPDES permit requirements during construction activities. Pursuant to the Menifee Municipal Code Section 15.01.015, new development or development projects shall control stormwater runoff to prevent any deterioration of water quality that would impair subsequent or competing uses of the water. The Department of Public Works and Engineering would review and approve best management practices (BMPs) contained in the Project applicant's submitted Stormwater Pollution Prevention Plan (SWPPP) to be implemented to reduce the discharge of pollutants during construction. The Proposed Project applicant's SWPPP shall identify erosion control BMPs to minimize pollutant discharges during construction activities. These identified BMPs would include stabilized construction entrances, sand bagging, designated concrete washout, tire wash racks, silt fencing, and curb cut/inlet protection. Impacts would be less than significant with the implementation of existing regulations.

Compliance with existing federal, state, and local regulations related to water quality, implementation of BMP's included in the project construction SWPPP would result in impacts to water quality being less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

Water supply in the area is provided by Eastern Municipal Water District (EMWD). EMWD has four sources of water supply: imported water from the Metropolitan Water District of Southern California (MWD), local groundwater, and recycled water (Menifee 2013). According to the 2020 Urban Water Management Plan (UWMP), EMWD expects to be able to provide reliable water supplies for an average year, single dry year, and multiple dry years for its existing and planned supplies (EMWD 2021). As discussed further in Section 19, *Utilities and Service Systems,* EMWD would have sufficient water supply to provide for the Proposed Project's water use. Proposed Project construction may require minimal amounts of water for dust suppression in order to comply with the SCAQMD recommendations regarding dust suppression during construction activities. Construction activities would be temporary in nature, lasting for approximately 17 months.

Therefore, no substantial increase in demand on groundwater supplies would occur, and adequate water supplies would be available to meet the needs of the project for dust suppression purposes.

The Proposed Project would result in the addition of impervious surfaces on the Project Site. According to the General Plan EIR, there are no percolation basins or other areas in the City used for intentional recharge of groundwater basins. Therefore, the Proposed Project would not substantially decrease groundwater supplies interfere substantially with groundwater recharge. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

c.(i) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?

c.(ii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

c.(iii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would 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?

c.(iv) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?

The BRA prepared for the Proposed Project (see Appendix B) identified a single unnamed drainage feature at the northern Project Site boundary. Therefore, the Proposed Project may alter the existing drainage patterns on the Project Site by introducing new grades and structures with impervious surfaces that could alter flow and direction of existing drainage from the Project Site's existing configuration.

As described under Checklist Item *a.*, above, the Proposed Project would be required to comply with Menifee Municipal Code Section 15.01.015. Compliance with such requirements would result in in implementation of standard construction BMPs to avoid or minimize temporary adverse effects such as erosion and siltation, as well as the provision of design standards for site drainage that includes the preservation of natural hydrological features. Furthermore, compliance with the Municipal Code would require the project to implement erosion controls, monitor and evaluate erosion control performance after a rainstorm event, and revise or repair sediment control systems as needed. Prior to the issuance of a grading permit for construction activities, the City must approve the Proposed Project's final erosion and sediment control plan and the community development department must review the project plans and impose any additional BMPs, terms, conditions, and requirements of the project.

Although the Proposed Project would alter existing land uses on the Project Site and result in the addition of impervious surfaces, the project would install under-drains to guide surface water into

existing storm drain inlets that are to be built along Chambers from construction of the neighboring Legado project, thus, minimizing impacts to the existing drainage pattern. If the Legado project were not to be built, then the improvements proposed to be built along Chambers would be the responsibility of the Applicant the proposed project. Therefore, the Proposed Project would not substantially alter the existing drainage pattern of the site which would result in substantial erosion or siltation on- or off-site, flooding on- or off-site, additional sources of polluted runoff, or impede or redirect flood flows. Thus, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

According to flood maps prepared by the Federal Emergency Management Agency (FEMA), the Proposed Project is located in Zone X, an area of minimal flood hazard (FEMA 2020). The Project Site is not located in an area subject to inundation by the 1-percent-annual-chance flood event. The Project Site is not subject to tsunami due to its elevation and distance (over 40 miles) from the ocean. There is low possibility of a seiche from these reservoirs affecting the Project Site given the Project's location to the nearest reservoir (approximately five miles). As noted in Section 7, *Geology and Soils*, the Project Site has not been identified as being in an area susceptible to landslides. Thus, the potential for mudflow is relatively low due to the lack of natural rivers and streams in the Project vicinity. No impact would occur.

NO IMPACT

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

The Project Site is located in the West San Jacinto Groundwater Management Area, which is currently managed through a Groundwater Sustainability Plan which was implemented in 2022. The San Jacinto Groundwater Basin is deemed a high priority basin, but not critically over drafted. As previously stated, the Proposed Project would not interfere with intentional groundwater recharge or substantially degrade water quality. Impacts related to water quality control plans or sustainable groundwater management plans would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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11 Land Use and Planning

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	■
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■

a. Would the project physically divide an established community?

The Project Site and surrounding area consist of vacant lots and residential land. The Proposed Project would be compatible with the surrounding land uses and would not impact adjacent uses with respect to building height, massing, or intensity of development. The Proposed Project is located entirely within the property and does not propose a structure, roadway, or flood control channel which would divide an established community. There would be no impact.

NO IMPACT

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

The Project Site is designated 8.1-14 R in the City's General Plan and zoned MDR, as discussed in detail above. The Proposed Project does not include changes to either designation or is consistent with the City's General Plan. In particular, the Proposed Project would be consistent with the intent of the General Plan to meet the Regional Housing Needs Assessment (RHNA) housing needs by constructing 132 multi-family homes on a vacant site, thereby adding to the housing stock within the City. In addition, as described in Section 3, *Air Quality*, and Section 8, *Greenhouse Gas Emissions*, the Proposed Project would be consistent with the goals and policies of the AQMP and SCAG's 2020-2045 RTP/SCS. Therefore, the Proposed Project would not conflict with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect.

Thus, no impact would occur, and mitigation is not required.

NO IMPACT

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12 Mineral Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
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?	☐	☐	☐	■
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?	☐	☐	☐	■

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

b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

According to Exhibit OSC-3 Mineral Resource Zones, the Project Site is within an MRZ-3 zone, which is defined as an area containing known or inferred mineral occurrences of undetermined mineral resource significance (Menifee 2013). The Project Site does not have any known presence of significant mineral resources and no mineral extraction or processing facilities are on the Project Site. The Project Site and surrounding properties are located in an urbanized area. There are no known mineral resources in or in the vicinity of the Project Site and the surrounding residential land uses are not compatible with mineral extraction. Therefore, the Proposed Project would have no impact on the availability or recovery of mineral resources.

NO IMPACT

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13 Noise

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project result in:				
c. 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?	☐	☐	■	☐
d. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
e. 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?	☐	☐	☐	■

Noise Overview

Sound is a vibration that transmits through a medium (such as a gas, liquid, or solid) created by a moving or vibrating source, which is capable of being detected by the hearing organs. Sound in the context of environmental analysis consists of sound that transmits through the open air from a source to a receiver. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds.

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 hertz (Hz) and less sensitive to frequencies around and below 100 Hz (Kinsler, et al. 1999). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as the doubling of vehicle traffic volumes, results in a noise level increase of 3 dB, whereas dividing the energy in half results in a 3 dB decrease (Crocker 2007).

Human perception of noise has no simple correlation with sound energy, i.e., the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources, each containing the same sound energy, do not “sound twice as loud” as one source. It is widely accepted that the average healthy human ear can detect changes (either increases or decreases) of 3 dBA, which is recognized as being barely perceptible to most people. Similarly, a change of 5 dBA is readily perceptible and a change of 10 dBA sounds twice (or half) as loud (Crocker 2007).

Descriptors

The impact of noise is not a function of loudness alone. The time of day when noise occurs, and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used in this analysis are the equivalent continuous noise level (L_{eq}) and the maximum noise level (L_{max}). The L_{eq} is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time. Typically, L_{eq} is equivalent to a one-hour period, even when measured for shorter durations as the noise level of a 10- to 30-minute period would be the same as the hour if the noise source is relatively steady. L_{max} is the highest Root Mean Squared (RMS) sound pressure level within the sampling period.

Propagation

Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dBA for each doubling of the distance away from the source. Other sources of noise, such as a road or railroad, are not a single, stationary point source of sound but rather, emanate noise from a line ("line" source. The drop-off rate for a line source is 3 dBA for each doubling of distance away from the source.

The propagation of noise is also affected by the absorption characteristics of the ground: a hard site, such as a parking lot or smooth body of water, provides no absorption/attenuation and the changes in noise levels with distance result simply from the geometric spreading of the source (i.e., 3 or 6 dBA reduction per doubling of distance for a point source or line source, respectively). Conversely, a soft site, such as soft dirt, grass, or scattered bushes and trees, may provide additional absorption/attenuation, potentially reducing noise levels an additional 1.5 dBA per doubling of distance away from the source (Caltrans 2013).

Noise levels may also be reduced by intervening structures. The amount of reduction provided by the "shielding" of these features depends on the size of the structure/s, the location of the structure/s relative to the noise source and receivers, and the frequency content of the noise levels. Natural terrain features, such as hills and dense woods, and man-made features, such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight between a noise source and receiver will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011).

Vibration Overview

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hz. The frequency of a vibrating object describes how rapidly it oscillates. Vibration levels are usually expressed as a single-number measure of vibration magnitude in terms of velocity or acceleration, which describes the severity of the vibration without the frequency variable. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal, usually measured in inches per second. Since it is related to the stresses experienced by buildings, PPV is often used in monitoring and controlling construction vibration to prevent damage to nearby structures.

Although PPV is appropriate for evaluating the potential of building damage, it is not suitable for evaluating human response. It takes some time for the human body to respond to vibrations. In a sense, the human body responds to an average vibration amplitude (Federal Transit Administration [FTA] 2018). Because vibration waves are oscillatory, the net average of a vibration signal is zero. Thus, the RMS amplitude is used to describe the "smoothed" vibration amplitude (FTA 2018). The RMS of a signal is the square root of the average of the squared amplitude of the signal, usually measured in inches per second. The average is typically calculated over a one-second period. The RMS amplitude is always less than the PPV and is always positive. Decibel notation is used to compress the range of numbers required to describe vibration. The abbreviation "VdB" is used in this analysis for "vibration decibels" to reduce the potential for confusion with sound decibels.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The City of Menifee General Plan Noise Element defines noise-sensitive land uses as "schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, libraries, passive recreation uses, places of worship, and other land uses where an excessive amount of noise would interfere with normal activities" (City of Menifee 2012). The closest sensitive receptors in the vicinity of the Project Site include the proposed Lennar at Legado residential community to be located approximately 110 feet to the north, single-family residences located as close as approximately 350 feet to the northeast, the Menifee Global Medical Center Hospital located approximately 875 feet to the east, the single-family residences located approximately 1,500 feet to the southeast, multifamily residences located approximately 830 feet to the southeast, single-family residences located approximately 740 feet to the south, adjacent single-family residences to the west, and Hans Middle School located approximately 2,200 feet to the west of the Proposed Project boundary.

Project Noise Setting

The primary noise source in the vicinity of the Project Site is vehicular traffic along McCall Boulevard and Interstate 215 (I-215). Existing traffic noise contours and noise levels for roadways throughout the City were determined in the Menifee General Plan Draft EIR (City of Menifee 2013). The draft EIR provided existing traffic noise levels at a distance of 100 feet from the centerline of each roadway. Table 16 shows the existing noise levels associated with roadway segments nearest to the Project Site, as well as estimated distances to each noise contour based on the existing traffic noise contours presented in the Draft EIR.

Table 16 Existing Traffic Noise Levels

Roadway	Segment	Reference Noise Level at 100 feet from Roadway Centerline (dBA CNEL)	Approximate Distance to CNEL Contour (feet)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
McCall Boulevard	East of Encanto Drive	68.3	77	165	355
I-215	Between Ethanac Road and McCall Boulevard	79.0	398	855	1,840

Source: City of Menifee 2013.

Based on the reference noise levels and distances shown in Table 16, existing noise levels within the project boundary, which is situated approximately 675-feet from McCall Boulevard and 4,700-feet from I-215, were estimated to range between 52 and 56 dBA CNEL.

Regulatory Setting

City of Menifee General Plan Noise Element

The Noise Element of the Menifee General Plan includes goals and policies aimed at the control and abatement of environmental noise and protection of citizens from excessive exposure to noise (City of Menifee 2012). The Noise Element specifies the maximum allowable unmitigated exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect City residents from excessive noise, the Noise Element contains the following goals related to the Proposed Project:

Goal N-1: Noise-sensitive land uses are protected from excessive noise and vibration exposure.

Policy N-1.2 Require new projects to comply with the noise standards of local, regional, and state building code regulations, including but not limited to the City's Municipal Code, Title 24 of the California Code of Regulations, the California Green Building Code, and subdivision and development codes.

Policy N-1.3 Require noise abatement measures to enforce compliance with any applicable regulatory mechanisms, including building codes and subdivision and zoning regulations, and ensure that the recommended mitigation measures are implemented.

Policy N-1.4 Regulate the control of nuisances, such as residential party noise and barking dogs, through the City's Municipal Code.

Policy N-1.7 Mitigate exterior and interior noises to the levels listed in Table 17 below to the extent feasible, for stationary sources adjacent to sensitive receptors.

Table 17 Stationary Noise Source Standards

Land Use	Time of Day	Interior Standards	Exterior Standards
Residential	10:00 p.m. to 7:00 a.m.	40 dBA L_{eq} (10 minute)	45 dBA L_{eq} (10 minute)
	7:00 a.m. to 10:00 p.m.	55 dBA L_{eq} (10 minute)	65 dBA L_{eq} (10 minute)

Source: City of Menifee General Plan Noise Element, Table N-1 (City of Menifee 2012).

Policy N-1.8 Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state, and City noise standards and guidelines as a part of new development review.

Policy N-1.9 Limit the development of new noise-producing uses adjacent to noise-sensitive receptors and require that new noise-producing land be designed with adequate noise abatement measures.

Policy N-1.11 Discourage the siting of noise-sensitive uses in areas in excess of 65 dBA CNEL without appropriate mitigation.

Policy N-1.13 Require new development to minimize vibration impacts to adjacent uses during demolition and construction.

Policy N-1.17 Prevent the construction of new noise-sensitive land uses within airport noise impact zones. New residential land uses within the 65 dB CNEL contours of any public-use or military airports, as defined by the Riverside County Airport Land Use Commission, shall be prohibited.

Onsite Land Use Compatibility

The Noise Element specifies land use compatibility criteria for various land uses based on a range of acceptable noise levels. These noise levels are shown in Table N-b3 of the City's Noise Element Background Document and Definitions (reproduced herein as Table 18). As shown in Table 18 below, single-family residential land uses are considered normally acceptable in noise environments below 60 dBA CNEL and conditionally acceptable in noise environments between 55 and 70 dBA CNEL.

However, as a result of the Supreme Court decision regarding the assessment of the environment's impacts on projects (*California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD)*, 62 Cal. 4th 369 (No. S 213478) issued December 17, 2015), it is generally no longer the purview of the CEQA process to evaluate the impact of existing environmental conditions on any given project. As a result, while the noise from existing sources (e.g., adjacent roadways) is considered as part of the baseline condition, the direct effects of exterior noise from nearby noise sources relative to land use compatibility of a Proposed Project is typically no longer a required topic for impact evaluation under CEQA. Generally, no determination of significance is required except for certain school projects, projects affected by airport noise, and projects that would exacerbate existing conditions (i.e., projects that would have a significant operational impact).

Table 18 Land Use Compatibility for Community Noise Environments

	dBA CNEL			
Land Uses	**Normally Acceptable[1]**	**Conditionally Acceptable[2]**	**Normally Unacceptable[3]**	**Clearly Unacceptable[4]**
Residential – Low Density Single Family, Duplex, Mobile Homes	50 – 60	55 – 70	70 – 75	75+
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	75+
Transient Lodging, Motels, Hotels	50 – 65	60 – 70	70 – 80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80+
Auditoriums, Concert Halls, Amphitheaters	N/A	50 – 70	N/A	70+
Sports Arena, Outdoor Spectator Sports	N/A	50 – 75	N/A	75+
Playgrounds, Neighborhood Parks	50 – 70	67.5 – 75	N/A	72.5+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 75	75 – 80	N/A	80+
Office Buildings, Businesses, Commercial and Professional	50 – 70	67.5 – 77	75+	N/A

Land Uses	dBA CNEL			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Industrial, Manufacturing, Utilities, Agricultural	50 – 75	70 – 80	75+	N/A

[1] Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

[2] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

[3] Normally Unacceptable: New construction or development should generally be discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

[4] Clearly Unacceptable: New construction or development generally should not be undertaken.

Source: Noise Background Document & Definitions, Table N-b3 (City of Menifee 2012).

City of Menifee Development Code

The City of Menifee Development Code (City of Menifee 2023) establishes standards for construction noise, operational noise, and vibration produced within the City.

CONSTRUCTION NOISE

Section 9.210.060(C) of the City of Menifee Development Code establishes noise control regulations within the City for construction. Specifically, the following are exempt from the City's noise standards:

- Private construction projects, with or without a Building Permit, located one-quarter of a mile from an inhabited dwelling.
- Private construction projects, with or without a building permit, located within one-quarter of a mile from an inhabited dwelling, provided that construction only occurs Mondays through Saturdays between the hours 6:30 a.m. to 7:00 p.m. Furthermore, construction is prohibited on Sundays or nationally recognized holidays unless approval is obtained from the City Building Official or City Engineer.

OPERATIONAL NOISE

Section 9.210.060(D) of the Menifee Development Code reiterates the noise standards established in the City's General Plan Noise Element, stating that no person shall create any sound, or allow the creation of any sound, on any property that causes the exterior and interior sound level on any other occupied property to exceed the sound level standards set forth in Table 17.

VIBRATION

Section 9.210.070 of the Menifee Development Code provides exemptions to the Code for certain vibration sources, specifying that "[v]ibration caused by motor vehicles, trains, and temporary construction is exempted from this standard" (City of Menifee 2023).

Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual

The City does not have established quantitative limits on construction noise and vibration and exempts these noise sources if they occur within allowable days and hours. However, to present a comprehensive environmental review of potential noise and vibration impacts during construction

of the Proposed Project, the criteria recommended by the Federal Transit Administration (FTA) in the *Transit Noise and Vibration Impact Assessment Manual* were used to evaluate noise and vibration levels during construction of the Project. This document provides criteria for assessing construction noise impacts based on the potential for adverse community reaction according to affected land use type and vibration impacts based on preventing minor architectural (i.e., non-structural) damage to nearby structures. Construction noise and vibration limits are shown in Table 19 and Table 20, respectively.

Table 19 FTA Construction Noise Criteria

	L_{eq}, equip (8-hour), dBA	
Land Use	**Day (7:00 a.m. to 10:00 p.m.)**	**Night (10:00 p.m. to 7:00 a.m.)**
Residential	80	70
Commercial	85	85
Industrial	90	90

dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level
Source: FTA 2018

Table 20 FTA Vibration Damage Criteria

Building Category	PPV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Nonengineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

PPV = peak particle velocity; in/sec = inches per second
Source: FTA 2018

Federal Aviation Administration

The Federal Aviation Administration (FAA) has established guidelines for assessing noise impacts based on the extent to which the existing ambient noise level at a site is increased (FAA 2020). Based on FAA recommendations, significant noise impacts are determined by the percentage of people who would be annoyed at various levels of noise exposure. FAA criteria indicates that significant impacts would occur if project-related noise were to increase the existing noise environment by the following:

- Greater than 1.5 dBA CNEL for ambient noise environments of 65 dBA CNEL and higher; or
- Greater than 3 dBA CNEL for ambient noise environments of 60 to 64 dBA CNEL; or
- Greater than 5 dBA CNEL for ambient noise environments of less than 60 dBA CNEL.

Impact Analysis

a. Would the project result in 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?

Construction

Per information provided by the Proposed Project applicant, construction would occur between 7:00 a.m. and 5:00 p.m. on Mondays through Saturdays; therefore, noise produced by construction would comply with the City's allowable hours and be exempt from the noise regulations in the City's Development Code. However, to present a comprehensive environmental review of potential noise impacts, construction noise resulting from the Proposed Project was evaluated and compared to applicable limits established by the FTA (shown in Table 19).

Temporary noise levels caused by construction activity would be a function of the noise generated by construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of noise-generating activities. For a construction noise assessment, construction equipment can be considered to operate in two modes: stationary and mobile. As a rule, stationary equipment operates in a single location for one or more days at a time, with either fixed-power operation (e.g., pumps, generators, and compressors) or variable-power operation (e.g., pile drivers, rock drills, and pavement breakers). Conversely, mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders (FTA 2018). Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts from mobile construction equipment are assessed from the center of the equipment activity area (e.g., construction site). Due to the complex and mobile nature of construction activity within a Project Site, the FTA *Transit Noise and Vibration Impact Assessment Manual* document recommends evaluating construction noise impacts from all equipment at the center of the construction site, stating that the distance variable in its recommended construction noise calculation "assumes that all equipment operates at the center of the project" (FTA 2018). For purposes of this analysis, the center of the Project Site was assumed to be located approximately 280 feet from the Project Site boundaries.

Construction noise was estimated using the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) (FWHA 2006). Typical construction projects have long-term noise averages that are lower than louder short-term noise events due to equipment moving around the site, work breaks, and idle time. Each phase of construction has a specific equipment mix depending on the work to be carried out during that phase. Accordingly, each phase is characterized by varying noise conditions; some phases will have higher continuous noise levels than others, while others may have more intermittent, high-impact noise levels. The maximum hourly L_{eq} of each phase is determined by combining the L_{eq} contributions from each piece of equipment used in that phase (FTA 2018). Project construction would include site preparation, grading, building construction, paving, and architectural coating phases. It is assumed that diesel engines would power all construction equipment. Noise levels generated during each phase of construction were estimated based on the equipment list provided by the applicant. For a conservative evaluation of noise impacts, it was assumed that all equipment during each phase would be operating simultaneously.

Table 21 shows the estimated noise levels at nearby sensitive receptors during each phase of construction. As shown in Table 21, construction noise levels would not exceed 80 dBA L_{eq} (8-hr) at

the nearest sensitive receptors. Therefore, temporary noise impacts resulting from construction of the Proposed Project would be less than significant.

Table 21 Estimated Noise Levels at Sensitive Receptors by Construction Phase

Construction Phase	dBA L_{eq} (8-hour)					
	RCNM Reference Noise Level	Single-Family Residences to West	Future Residences at Legado Residential Community to North	Single-Family Residences to Northeast	Single-Family Residences to South	Menifee Global Medical Center Hospital to East
Distance (feet)	*50*	*335*	*390*	*735*	*1,015*	*1,215*
Site Preparation	87	71	70	64	61	60
Grading	88	71	70	64	61	60
Building Construction	86	70	68	63	60	58
Paving	86	69	68	62	59	58
Architectural Coating	83	66	65	59	57	55

dBA = A-weighted decibel; L_{eq} = equivalent continuous sound level; RCNM = Roadway Construction Noise Model

See Appendix F for construction noise modeling results.

Operation

ONSITE STATIONARY NOISE SOURCES (HVAC EQUIPMENT)

The Proposed Project would feature exterior heating, ventilation, and air conditioning (HVAC) equipment located at the rear of each residence. Per information provided by the Project applicant, one HVAC unit would serve each residence. HVAC units would be Carrier 3-ton units, such as the Carrier 38MURAQ36AA3 compact heat pump, which produces a sound pressure level of approximately 61 dBA at an assumed distance of 3.3 feet away.

The HVAC units located at the southwestern portion of the Project Site represent the equipment with the potential to generate the highest levels of noise at nearby receptors, as these would be the closest units to nearby sensitive receptors (i.e., residences located to the west of the Project Site, along Chatham Lane). Note that only the 11 closest HVAC units were accounted for in calculating the combined noise level at the nearest residential property line to the west, as the noise level from each farther unit would continue to decrease with distance and have a diminishing contribution to the overall combined noise level. These HVAC units would be situated as close as approximately 70 feet from the nearest residential property line to the west. Each HVAC unit was modeled as a "point" source of noise, which has a characteristic noise reduction of 6 dBA per doubling of distance away from the source. Assuming these 11 units would be operating simultaneously, the combined noise level at the nearest residential property line to the west would be approximately 42 dBA, which would not exceed the City's nighttime limit of 45 dBA L_{eq} at the nearest residential property line to the west, and operational noise impacts associated with the Project's onsite stationary noise sources would be less than significant.

OFFSITE MOBILE NOISE SOURCES (TRAFFIC)

Once operational, the Proposed Project would generate additional noise in the form of increased traffic volumes on nearby roadways (primarily Antelope Road and McCall Boulevard) due to residents and visitors traveling to and from the site. The relative noise increases associated with the Project on nearby roadways were determined by comparing the existing traffic volumes with the expected number of daily vehicle trips during Project operation. Because the City does not have quantitative limits for assessing traffic noise impacts, the thresholds established by the FAA were used. As discussed above, the existing ambient noise environment at the Project Site is estimated to range between 52 and 56 dBA CNEL; therefore, offsite traffic noise impacts would be considered significant if Project-generated traffic were to increase existing ambient noise levels by 5 dBA CNEL or more on nearby roadways.

Based on the Traffic Impact Analysis completed for the Project (Translutions, Inc. 2025), the Proposed Project would generate an increase of 950 daily trips, including 63 additional trips during the AM peak hour and 75 additional trips during the PM peak hour. The Proposed Project would not make substantial alterations to roadway alignments or substantially change the vehicle classifications mix on nearby roadways. Therefore, the primary factor affecting offsite noise levels would be increased traffic volumes. As outlined in the Traffic Impact Analysis, the existing AM peak hour[4] traffic volumes on Antelope Road and McCall Boulevard are 505 and 1,749 vehicles, respectively, based on turning movement volumes at intersections near the Project Site. Assuming that these peak hour volumes represent 10 percent of the average daily traffic (ADT) volume on these roadways, the existing ADT volumes on Antelope Road and McCall Boulevard are approximately 5,050 and 17,490 vehicles, respectively. An increase of 950 daily vehicle trips on these roadways (increasing the ADT volumes to 6,000 vehicles on Antelope Road and 18,440 vehicles on McCall Boulevard) would result in noise increases of approximately 0.7 dBA CNEL on Antelope Road and 0.2 dBA CNEL on McCall Boulevard, which would not exceed the FAA's threshold of 5 dBA CNEL or more based on the existing ambient noise environment in the vicinity of the Project Site. Therefore, operational noise impacts associated with the Project's offsite noise sources would be less than significant.

Onsite Land Use Compatibility

As discussed in the *Regulatory Setting* section above, evaluating the impact of existing environmental conditions upon a project is not necessary under CEQA. However, in order to present a comprehensive environmental review, noise levels at the Project Site were evaluated to the land use compatibility guidelines established in the City's General Plan Noise Element (shown in Table 18).

Traffic noise contours for the year 2035 were established in the Menifee General Plan Draft EIR (City of Menifee 2013). Additionally, the Draft EIR provides year 2035 noise levels at a reference distance of 100 from the centerline of various roadways throughout the City. Table 22 shows the year 2035 noise levels associated with roadway segments nearest to the Project Site, as well as estimated distances to each noise contour based on the year 2035 noise contours presented in the Draft EIR.

[4] Note that the AM peak hour traffic volumes were used for evaluating Project-related traffic noise impacts because the AM peak hour volumes were lower than the PM peak hour volumes. Using the lower AM peak hour volumes represents a more conservative analysis as the relative increase in traffic volumes (and resulting noise increase) is higher.

Table 22 Year 2035 Traffic Noise Levels

Roadway	Segment	Reference Noise Level at 100 feet from Roadway Centerline (dBA CNEL)	Approximate Distance to CNEL Contour (feet)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
McCall Boulevard	East of Encanto Drive	71.7	129	277	600
I-215	Between Ethanac Road and McCall Boulevard	81.6	590	1,275	2,750

dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level

Source: City of Menifee 2013.

Based on the reference noise levels shown in Table 22, year 2035 traffic noise contours within the Project Site boundary are estimated to range between 55 and 59 dBA CNEL. Therefore, the Proposed Project would be located in a "Normally Acceptable" noise environment and would be consistent with the City's exterior noise compatibility standards.

Furthermore, standard building construction practices typically provide an exterior-to-interior noise reduction of 25 dBA. Under this assumption, interior noise levels in the residences closest to McCall Boulevard would be below 45 dBA CNEL, which complies with the State's interior noise requirements of 45 dBA CNEL. Therefore, the Proposed Project would also be consistent with the State's interior noise compatibility standards.

LESS THAN SIGNIFICANT IMPACT

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction Vibration

Construction activities known to generate excessive groundborne vibration, such as pile driving and blasting, would not be conducted during construction of the Project. Therefore, the greatest known sources of vibration during Proposed Project construction activities would be a vibratory roller and large earthmoving equipment (such as a backhoe, excavator, and grader). Based on the limits of work boundary shown on the provided site plan, a vibratory roller may be used as close as approximately 60 feet from the nearest offsite structure (residences to the west of the Project Site). A vibratory roller generates a vibration level of approximately 0.210 in/sec PPV at a reference distance of 25 feet (FTA 2018), which would attenuate to approximately 0.056 in/sec PPV[5] at 60 feet away. Large earthmoving equipment would be used as close as approximately 70 feet from the nearest offsite structure (residences to the west of the Project Site). This type of equipment generates a vibration level of approximately 0.089 in/sec PPV at a reference distance of 25 feet (FTA 2018), which would attenuate to approximately 0.019 in/sec PPV at 70 feet away. Vibration levels generated by use of a vibratory roller and large earthmoving equipment would not exceed the significance threshold of 0.2 in/sec PPV at the nearest offsite residential structures, therefore temporary vibration impacts associated with construction of the Proposed Project would be less than significant.

[5] $PPV_{Equipment} = PPV_{Ref}(25/D)^n$ (in/sec), PPV_{Ref} = reference PPV at 25 feet, D = distance ,and n = 1.1

Operational Vibration

Operation of the Proposed Project would not include substantial sources of vibration; therefore, no vibration impacts would occur.

LESS THAN SIGNIFICANT IMPACT

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?

The closest public or public use airport to the Project Site is the Perris Valley Airport (Federal Aviation Administration [FAA] location identifier [LID] L65), located approximately 3.6 miles northwest of the Project Site. The Project Site is not located within the noise contours of the airport according to the Riverside County Land Use Compatibility Plan (Riverside County Airport Land Use Commission 2004). Therefore, residents and workers in the Proposed Project vicinity would not be exposed to excessive aviation-related noise impacts and no impacts would occur.

NO IMPACT

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14 Population and Housing

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	■	☐
a. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

a. Would the project 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)?

The Proposed Project would result in the development of 132 dwelling units. According to the Department of Finance (DOF), the City of Menifee has a population of 106,627 persons and an average of 2.85 persons per household as of 2022 (DOF 2024). The Southern California Association of Governments (SCAG) Regional Transportation/Sustainable Communities Strategy (RTP/SCS) Adopted Growth Forecast projects an approximate population of 129,300 by the year 2045 (SCAG 2020). The Proposed Project could result in an increase of approximately 376 residents (132 units x 2.85 persons per household). This increase in population is within the growth assumptions estimated by SCAG for the City. Therefore, the Proposed Project would not cause a substantial direct or indirect increase in population or induce unplanned population growth. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

The Project Site is located on an undeveloped site within an area comprised of residential, mixed-use, and vacant land. The Proposed Project would not displace existing housing or any people necessitating the construction of replacement housing elsewhere. No impact would occur.

NO IMPACT

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15 Public Services

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
a.	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	1 Fire protection?	☐	☐	■	☐
	2 Police protection?	☐	☐	■	☐
	3 Schools?	☐	☐	■	☐
	4 Parks?	☐	☐	■	☐
	5 Other public facilities?	☐	☐	■	☐

a.1. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The Riverside County Fire Department provides fire protection and emergency medical response services in the City. Station No. 7 is located approximately 1.8 miles southwest of the Proposed Project Site at 28349 Bradley Road. Station No. 7 is within Battalion 13 of the Riverside County Fire Department. Battalion 13 serves over 100,000 residents over 42 square miles (CALFIRE and Riverside County Fire 2022). The Proposed Project would not have a significant impact on fire response times, because the Project is located within the existing service area of the Riverside County Fire Department. Also, as noted in a comment from the City's Fire Department, fire flow construction, fire hydrant spacing, and sprinkler systems are required and should be approved prior to issuance of any building permits. No new or expanded fire protection facilities would be required as a result of this Proposed Project. Impacts related to expansion of fire protection services would be less than significant, and no mitigation is required.

LESS-THAN-SIGNIFICANT IMPACT

a.2. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The Proposed Project would be served by the Menifee Police Department. The Menifee Police Department is located at 29714 Haun Road in Menifee, approximately one mile southwest of the Proposed Project Site. The Proposed Project would introduce 376 additional residents to the City which would create an insignificant increase in the police department's service population. Therefore, no new or expanded police facilities would need to be constructed as a result of this project. Per Menifee Municipal Code Chapter 8.02 (Development Impact Fees), new development is required to pay impact fees that can go toward purchasing land and construction of new police service facilities. The Proposed Project's impact with respect to police services would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.3. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

The Proposed Project is located within the Menifee Union School District and Perris Union High School District. The construction of residential dwellings would generate school-aged residents and the Proposed Project is subject to development fees for school facilities pursuant to Senate Bill 50 (SB 50). With the payment of these development fees, less than significant impacts are expected to occur, and no mitigation is required.

LESS-THAN-SIGNIFICANT IMPACT

a.4. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

Demand for park and recreational facilities typically results from residential development. The Proposed Project would generate residents but would also provide on-site recreational facilities, such as 2.8 acres of open space. While the Proposed Project's residents would likely utilize off-site park facilities as well, most recreational demands would be met on site. Additionally, the California Quimby Act authorizes the City of Menifee to require the dedication of land or to impose fees for park or recreational purposes as a condition of the approval, which is imposed per Menifee Municipal Code Chapter 8.02. Therefore, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.5. Would the project result in substantial adverse physical impacts associated with the provision of other new or physically altered public facilities, or the need for other new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

As discussed above, the Proposed Project would result in growth of approximately 376 residents. This increase is within the SCAG projections for Menifee and is insignificant to the area. The expansion of public services such as libraries or hospitals would not be required. The Proposed Project would not significantly increase the demand of such services. A less than significant impact would occur, and no mitigation is required.

LESS-THAN-SIGNIFICANT IMPACT

16 Recreation

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

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?

The Proposed Project includes residential development that would create demand for park and recreational facilities. Although the facility would result in approximately 376 residents, parkland and other recreational facilities would be provided as part of the Proposed Project, as discussed in Section 15, *Public Services*. The Proposed Project, therefore, would not generate substantial demand for new or expanded park facilities which might have an adverse physical effect on the environment. Impacts would be less than significant, and no mitigation is required.

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?

The Proposed Project includes the previously discussed on-site active and passive recreational facilities whose potential adverse physical effects on the environment have been considered in conjunction with the rest of the project. Due to these on-site facilities, the construction or expansion of off-site recreational facilities would not be required. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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17 Transportation

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

A Traffic Study was prepared for the Proposed Project in March of 2025 by Translutions (Appendix K). The analysis below is partially based on the Traffic Study analysis and the CalEEMod results determined in the Air Quality and Greenhouse Gas Report (Appendix A).

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

The City follows the *City of Menifee Engineering Department LOS Traffic Study Guidelines* (October 2020) for level of service analyses. The operational analysis includes a quantitative evaluation of the project's access and circulation operations. The study area, analysis scenarios, and analysis methodologies are based on the guidelines and on discussion with City staff. The approved scoping agreement, which is the basis of the Traffic Study, is included in Appendix A to the Traffic Study.

The information below is a short summary of the Traffic Study for the Proposed Project.

Construction

Construction of the Proposed Project would generate traffic for deliveries of equipment and materials to the Project Site as well as construction worker and vendor traffic. Construction-related vehicles would travel to and access the Project Site via Antelope Road. Construction vehicles and equipment would be staged on the Project Site and are not expected to affect the performance of the City's circulation system.

Construction traffic would be temporary, and the movement of construction equipment would be limited to the Project Site. Construction of the Proposed Project would not involve any vehicle or equipment staging on Antelope Road and the project would not require any long-term lane closures on Antelope Road, as construction staging is not permitted in the public right-of-way. No public

transit stops are located within the vicinity of the Project Site; thus, the Proposed Project would not impair public transit operations. In addition, project construction and operation would not require temporary closures or alterations to the sidewalk or bike lanes on Menifee Road. Therefore, construction activities would not substantially interfere with the City's circulation system.

Operation

Based on the trip generation and trip distribution of the Proposed Project, and based on discussion with City staff, the Traffic Report analyzes the following intersections and roadway segments for traffic operations:

Study Intersections

- Chatham Lane/ Chambers Avenue
- Driveway 1/ Chambers Avenue
- Antelope Road/ Chambers Avenue
- Chatham Lane/ Tioga Lane
- Driveway 2/ Tioga Lane
- Antelope Road/ Tioga Lane
- Chatham Lane/ McCall Boulevard
- Antelope Road/ McCall Boulevard

Roadway Segments

- Antelope Road from Chambers Avenue to McCall Boulevard

Existing Conditions

As shown in Traffic Report, the Proposed Project is anticipated to generate 63 trips during the a.m. peak hour, 75 trips during the p.m. peak hour, and 950 daily trips. An intersection level of service (LOS) analysis was conducted for existing conditions to determine current circulation system performance. As detailed in the Traffic Study, all existing study area intersections are currently operating at acceptable levels. Additionally, as shown in the Traffic Study, the study area roadway segment is currently operating at a satisfactory level of service.

Existing Plus Project Conditions

According to the Traffic Study, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours. Also, the study area roadway segment is forecast to operate at a satisfactory level of service.

Opening Year Without Project Conditions

According to the Traffic Study, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours during the opening year. Also, the study area roadway segment is forecast to operate at a satisfactory level of service.

Opening Yeas With Project Conditions

According to the Traffic Study, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours. Also, the study area roadway segment is forecast to operate at a satisfactory level of service with Proposed Project conditions.

Opening Year Cumulative Without Project Conditions

According to the Traffic Study, and for the opening year cumulative without the Proposed Project, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours. Also, the study area roadway segment is forecast to operate at a satisfactory level of service.

Opening Year with Cumulative Project Conditions

According to the Traffic Study, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours. Also, the study area roadway segment is forecast to operate at a satisfactory level of service.

Summary and Conclusions

As mentioned above, the Proposed Project is forecast to generate 63 trips during the a.m. peak hour, 75 trips during the p.m. peak hour, and 950 daily trips. Based on the LOS analysis, no operational deficiencies are caused by the Proposed Project, and no circulation improvements are recommended. All intersections and roadway segments are forecast to operate at satisfactory conditions under existing, opening year and opening year cumulative conditions. Therefore, the Proposed Project would not affect transportation service levels in a manner that would conflict with City plans or policies related to transportation system performance. Thus, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended *CEQA Guidelines*, specifically Section 15064.3, generally require the use of VMT as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects state-wide are required to utilize the updated *CEQA Guidelines* for evaluating transportation impacts as of July 1, 2020.

The Proposed Project VMT impact has been assessed in accordance with the City Transit Impact Analysis (TIA) Guidelines, which establish screening thresholds for certain types of projects that may be presumed to cause a less than significant VMT impact based on substantial evidence provided in the Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018). Consistent with recommendations in the OPR Technical Advisory, the City has established three screening criteria for projects that may be presumed to have a less than significant VMT impact. These include whether the Proposed Project is located within a Transit Priority Area (TPA), whether it is a residential or office project located in a low-VMT generating area based on the

Riverside County Transportation Model (RIVCOM), or if the Proposed Project is a local-serving retail development of less than 50,000 square feet.

According to the VMT Screening Memorandum performed during the Scoping Agreement phase of the process, the Proposed Project is screened out from a detailed VMT analysis since the Project Site is within a TAZ where the baseline VMT conditions (29.3 VMT per service population) do not exceed the threshold jurisdiction VMT per service population (33) (Translutions 2025). The residential uses associated with the Proposed Project are consistent with the predominant land uses in the vicinity of the Project Site, which are primarily residential land uses. Therefore, the Proposed Project is expected to generate similar VMT as the existing land uses in this low-VMT area. In accordance with the City's VMT thresholds, VMT impacts associated with the Proposed Project would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

The Proposed Project would not alter or affect the existing street and intersection networks in its vicinity. The Proposed Project would be accessible by two separate driveway locations for ingress and egress along both Chambers Avenue and Tioga Lane. Final Project Site plans would be subject to City review and approval which would ensure that project driveway intersections and internal circulation are safe, with adequate sight distance, driveway widths and stop signs where necessary for entering and exiting the site. In detail, the final plans would also identify access routes to/from the Project Site and potential turning movement restrictions for City review and approval. This would prevent any potential project impacts caused by a design feature.

The Project Site is surrounded by residential development to the west, across Chatham Lane, vacant land to the north and south, and additional residential lands to the northeast. As such, the proposed multi-family residential project would be consistent with land uses in its vicinity, as it would be an extension of existing uses in this particular area of Chatham Lane and Antelope Road.

Therefore, the proposed use of the Project Site would be consistent with the existing zoning ordinance. As such, the Proposed Project would not introduce incompatible uses, including vehicles or equipment, to the Project Site or the surrounding area. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project result in inadequate emergency access?

The proposed project's driveways and internal roadways would be utilized as access roads for emergency vehicles. All minimum street width measurements would be met in accordance with the Riverside County Fire Department standards for all portions of the driveways and internal roadways, and the internal roadways would be clearly marked, maintained, and clear of obstruction at all times during and after construction. The Proposed Project would be required to comply with Riverside County Fire Department requirements for adequate access. Project Site access and circulation would provide adequate access and turning radius for emergency vehicles, consistent with the Riverside County Fire Department's requirements. Emergency access to the Project Site would be maintained during construction. No impact would occur regarding emergency access.

NO IMPACT

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18 Tribal Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a Public Resources Code Section 21074 as either a site, feature, place, or 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:				
a. 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)?	☐	■	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	■	☐	☐

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 that is 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)?

b. Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is 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?

As of July 1, 2015, AB 52 was enacted and expands CEQA by defining a new resource category, "tribal cultural resources." AB 52 establishes that "A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states that the 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) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" that are either:

1. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or
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 for California tribes regarding those resources. The consultation process 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." 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.

Request for AB52 tribal consultation sent out 8/01/2022 to local tribes in the area (Pechanga Band of Indians, Agua Caliente, Rincon Band of Luiseno Indians, and Soboba). Pechanga officially requested tribal consultation for the project. The cultural report was sent to Pechanga and Soboba on 1/09/2025 along with the standard city cultural conditions of approval. The City met with Soboba on 1/28/2025 as part of ongoing quarterly meetings and Soboba agreed with implementing the agreed upon conditions of approval and had no further comments on the project. The City met with Pechanga on 5/15/2025 as a part of the ongoing quarterly meetings; the tribe agreed to implementing the following two conditions; 1) inadvertent finds and 2) discovery of human remains.

Nevertheless, there is a possibility of intact tribal cultural resources that exist at the depth of grading. Due to this uncertainty, Mitigation Measures CUL-1 through CUL-7 have been incorporated (see Section 5, Cultural Resources, above) to address any previously undiscovered archaeological resources relating to TCRs encountered during Project implementation.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

19 Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
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?	☐	☐	■	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	■	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	■	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	■	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	■	☐

a. Would the project 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?

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

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

As stated earlier, EMWD provides water service to the City of Menifee. EMWD has four sources of water supply: imported water from MWD, local groundwater, and recycled water (EMWD 2021). In normal year, single dry year, and multiple dry year scenarios presented by the 2020 EMWD Urban Water Management Plan, supply would meet demand under the normal year, single dry year, and multiple dry year scenarios (EMWD 2021). EMWD is able to respond to supply shortages through implementation of its Water Shortage Contingency Plan (WSCP). Based on the CalEEMod assumptions, the Proposed Project's estimated water demand is approximately 153.7 AFY. According to the UWMP projections, 2045 water demand in the City is anticipated to be 251,500 AFY and 2045 supply is 251,500 AFY under normal year conditions. Therefore, Proposed Project's water demand would represent less than 0.2 percent of the City's anticipated water demand in 2045. According to the General Plan EIR, there is sufficient supply to meet demand of General Plan buildout and impacts were determined to be less than significant. Impacts related to water supply would be less than significant, and no mitigation is required.

Wastewater generated at the Project Site would be collected at the Sun City Regional Water Reclamation Facility (RWRF) and treated at the Perris Valley RWRF. The Proposed Project would generate minimal wastewater to be conveyed to the Perris Valley RWRF and would be well within the existing remaining treatment capacity of the Perris Valley RWRF.

The water and sewer system in Menifee is owned and operated by EMWD. Connections to local water and sewer mains associated with the Proposed Project would involve temporary and less than significant construction impacts that would occur in conjunction with other on-site improvements. No additional improvements are needed to either sewer lines or treatment facilities to serve the Proposed Project. Standard connection fees would address any incremental impacts of the Proposed Project. Therefore, the Proposed Project would be less than significant.

Electrical service to the Project Site is provided by SCE, which maintains substations and transmission lines throughout southern California, including the Valley Substation approximately 1.5 miles northeast of the Project Site on Menifee Road. SCG provides natural gas service to the Project Site. As discussed in Section VI, the Proposed Project would involve an increase in electricity and natural gas demand to serve the project; however, this demand increase would not be a wasteful use of energy and is not anticipated to require additional electricity substations or natural gas storage/transmission facilities. Impacts with respect to new or expanded electric power or natural gas facilities would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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

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

Assembly Bill 341 (AB 341) set a statewide goal for a 75 percent reduction in waste disposal by the year 2020 and established mandatory recycling for commercial businesses. The City is required to comply with this law and report their progress towards achieving the 75 percent reduction goal to

the Department of Resources Recycling and Recovery (CalRecycle). The City's Public Works Department supplies residents, businesses, and institutions with waste carts for recyclables and green waste through their contract with the private waste hauler, Waste Management. The City of Menifee utilizes three landfills: Badlands Sanitary Landfill, El Sobrante Landfill, and Lamb Canyon Sanitary Landfill (CalRecycle 2023a). Badlands Sanitary Landfill has a maximum daily capacity of 5,000 tons per day and a maximum capacity of 82,300,000 cubic yards. The remaining capacity is 7,800,000 cubic yards and it is scheduled to cease operation in January 2059. El Sobrante Sanitary Landfill has a maximum daily capacity of 16,054 tons per day and a maximum capacity of 209,910,000 cubic yards. The remaining capacity is 143,977,170 cubic yards and it is scheduled to cease operation in January 2051. Lamb Canyon Landfill has a maximum daily capacity of 5,000 tons per day and a maximum capacity of 39,681,513 cubic yards. The remaining capacity is 19,242,950 cubic yards and it is scheduled to cease operation in April 2032.

The landfills serving the Project Site had a combined annual daily capacity of 26,054 tons per day and a combined maximum capacity of 331,891,513 cubic yards (CalRecycle 2023b). According to CalEEMod (see Appendix A), the project would generate roughly 97.5 tons of solid waste per year (0.27 tons per day). This would be considered negligible and would not create the need for new facilities.

Additionally, the Proposed Project would comply with federal, state, and local statutes and regulations related to solid waste and recycling, such as AB 341, through participation in existing City waste diversion programs. Therefore, there would be a minimal increase in solid waste generation and there would be a less than significant impact to solid waste and waste facilities.

LESS-THAN-SIGNIFICANT IMPACT

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20 Wildfire

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
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?	☐	☐	■	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	■	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	■	☐
d. Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	■	☐

a. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

b. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

A Fire Hazard Severity Zone (FHSZ) is a mapped area that designates zones (based on factors such as fuel, slope, and fire weather) with varying degrees of fire hazard (i.e., moderate, high, and very high). While FHSZs do not predict when or where a wildfire will occur, they do identify areas where wildfire hazards could be more severe and therefore are of greater concern. FHSZs are meant to help limit wildfire damage to structures through planning, prevention, and mitigation activities/requirements that reduce risk. The FHSZs serve several purposes: they are used to designate areas where California's wildland urban interface building codes apply to new buildings, they can be a factor in real estate disclosure, and they can help local governments consider fire hazard severity in the safety elements of their general plans.

The Project Site is located within a local responsibility area (LRA) identified as Very High Fire Severity Zone and shall comply with Chapter 7A of the California Building Code and Chapter 49 of the California Fire Code. The Project is also required to comply with Title 14 from the California Board of Forestry and Fire Protection.

The Proposed Project involves the construction of 132 multi-family units that would increase demand for fire protection services. As discussed in Section 15, Public Services, the Project Site is in a semi-urbanized area already served by the Riverside County Fire Department and would not have a significant impact on fire response times nor create a substantially greater need for additional fire protection services above current capacity. As discussed above, the Project will be required to submit a Fire Protection Plan to the City's Engineering Department for review and approval, including fuel modification and landscaping details. These items would be included as conditions of approval prior to building permits being issued. Construction of the Proposed Project would maintain emergency access to the site and on area roadways and would not include any components, such as roadway closures, which would interfere with an emergency response plan or evacuation route. Thus, the Proposed Project would have a less than significant impact to wildfire risk.

LESS-THAN-SIGNIFICANT IMPACT

21 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
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?	☐	■	☐	☐
b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	■	☐
c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

a. Does the project 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?

As discussed in Section 4, *Biological Resources*, with mitigation, the Project would not 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. As discussed in Section 5, *Cultural Resources*, the Project Site does not contain any known historical or archaeological or tribal cultural resources. As a result, the Proposed Project would not eliminate an important example of major periods of California history or prehistory. However, mitigation is proposed to help reduce potential impacts,

such as accidental discovery. Thus, impacts would be less than significant with mitigation incorporated.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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)?

As described in the discussion of environmental checklist Sections 1 through 20, with respect to all environmental issues, the Proposed Project would not result in significant and unmitigable impacts to the environment. All anticipated impacts associated with the Proposed Project would be less than significant. This is largely due to the fact that project construction activities would be temporary, infrequent, and low-intensity and would not significantly alter the environmental baseline condition.

Cumulative impacts could occur if the construction of other projects occurs at the same time as the Proposed Project and in the same geographic scope, such that the effects of similar impacts of multiple projects combine to create greater levels of impact than would occur at the project-level. For example, if the construction of other projects in the area occurs at the same time as Proposed Project activities, combined air quality and noise impacts may be greater than at the Proposed Project-level but would not create a potentially significant impact.

Implementation timing of other similar style projects is not known; therefore, it is possible that implementation of these projects and the Proposed Project may overlap. To be specific, no other probable future projects within 0.5 mile of the Project Site are known at this time.

With that said, project impacts are primarily temporary, localized effects, which would occur during project construction. Therefore, the potential for the Project to contribute to cumulative impacts would be limited to the infrequent periods of project activities for the following issue areas:

- **Air Quality:** Air pollution may combine with other cumulative projects (past, present, and reasonably near future) to violate criteria pollutant standards if the existing background sources cause nonattainment conditions. Air districts manage attainment of the criteria pollutant standards by adopting rules, regulations, and attainment plans, which comprise a multifaceted programmatic approach to such attainment. The SCAQMD's thresholds are designed such that the implementation of individual projects would not create an exceedance of or exacerbate an existing exceedance of State and Federal AQMP's. Therefore, a project's cumulative impacts are determined by the same thresholds as a project's individual significance. The Proposed Project would be consistent with the AQMP growth forecast, regional and localized air quality thresholds, and result in less than significant impact to sensitive receptors to criteria pollutants, TAC, and odors. Therefore, the Proposed Project's contribution to cumulative air quality impacts would not be cumulatively considerable.
- **Biological Resources**. If the Proposed Project and other planned residential projects in nearby neighborhoods are constructed during the bird nesting season, these projects could result in cumulative impacts to special status bird species and nesting birds within the vicinity of Project Site. However, all projects, including the Proposed Project, would be required to adhere to the provisions of the MBTA related to the protection of nesting birds. In addition, all projects would be required to comply with the biological resources policies and standards of the City's Municipal Code which would minimize the potential for these

projects to result in cumulative impacts to special status species, wetlands, wildlife movement, and biological resources protected by local policies and ordinances. Furthermore, the Proposed Project was found to have less than significant impacts related to sensitive natural communities, riparian habitat, and adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plan and therefore would not combine with other projects to result in cumulative impacts to these resources.

- **Greenhouse Gas Emissions.** GHG impacts are assessed in a cumulative context since no single project can cause a discernible change to climate. The vast majority of 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 for the Proposed Project involved an analysis of whether a project's contribution toward an impact is cumulatively considerable. The Proposed Project would not exceed SCAQMD's recommended interim GHG threshold that would capture 90 percent of GHG emission from the residential and commercial sectors for all new development projects. The proposed multi-family residential development would be designed to be energy efficient and meet Title 24 requirements. Therefore, the Proposed Project's contribution to cumulative GHG emissions would not be cumulatively considerable.
- **Hazards and Hazardous Materials.** Similar to the Proposed Project, cumulative development projects in the local neighborhoods would be required to comply with regulations applicable to the use, disposal, and transportation of hazardous materials, and compliance with applicable regulations would reduce potential cumulative impacts to less-than-significant levels. With respect to the use and accidental release of hazardous materials in the environment at construction sites and the inadvertent mobilization of existing hazardous contaminants from construction activities, effects are generally limited to site-specific conditions. Therefore, there would be no cumulative impact related to accidental release of hazardous materials.
- **Noise.** Overlapping construction activities associated with cumulative development projects in the local neighborhoods in conjunction with Proposed Project activities could result in cumulative noise impacts related to a temporary increase in ambient noise levels at the same noise-sensitive residences located throughout the area, especially during construction activities. Nonetheless, as discussed in Section 13, *Noise*, the Proposed Project would not result in temporary noise levels in excess of the daytime construction noise threshold, and residential projects typically do not involve highly intensive construction activities with simultaneous operation of multiple pieces of heavy-duty construction equipment that generate significant levels of noise. Therefore, no cumulative construction noise impact would occur.

Given the above discussion, the Proposed Project would not result in a cumulatively considerable contribution to a significant cumulative impact.

LESS-THAN-SIGNIFICANT IMPACT

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

In general, impacts to human beings are associated with air quality, hazards and hazardous materials, and noise impacts. The project would not conflict with or obstruct implementation of the

SCAQMD's AQMP and would not expose human beings to substantial air pollutant emissions in excess of SCAQMD regional and localized significance thresholds. As discussed in Section 9, *Hazards and Hazardous Materials*, compliance with federal, state, and local laws regulating the transportation of hazardous materials would prevent the accidental release of hazardous materials during construction, and the Project would not involve the use of hazardous materials during operation. As discussed in Section 13, *Noise*, project construction and operational noise would not exceed the threshold of significance. Therefore, the Project would not cumulatively adversely affect human beings, directly or indirectly, and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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1.1. Basic Project Information

Data Field	Value
Project Name	Cypress Sands Residential
Construction Start Date	8/1/2025
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	0.20
Location	33.72022800091564, -117.17273713426104
County	Riverside-South Coast
City	Menifee
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5517
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

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
Condo/Townhouse	132	Dwelling Unit	2.86	139,920	68,530	—	426	—

Parking Lot	31.0	Space	1.68	0.00	0.00	—	—	—
Other Asphalt Surfaces	0.61	Acre	0.61	0.00	0.00	—	—	—
Other Non-Asphalt Surfaces	2.81	Acre	2.81	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.	4.84	4.11	32.5	49.4	0.07	1.28	2.78	3.97	1.18	0.55	1.64	—	9,292	9,292	0.37	0.19	7.70	9,365
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	38.9	38.7	47.4	64.9	0.11	1.91	2.90	4.80	1.76	0.48	2.24	—	13,124	13,124	0.49	0.28	0.17	13,221
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.15	4.75	17.2	25.7	0.04	0.66	1.52	2.18	0.61	0.30	0.91	—	5,101	5,101	0.18	0.12	1.85	5,143
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.94	0.87	3.14	4.69	0.01	0.12	0.28	0.40	0.11	0.06	0.17	—	844	844	0.03	0.02	0.31	852

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.84	4.11	32.5	49.4	0.07	1.28	2.78	3.97	1.18	0.55	1.64	—	9,292	9,292	0.37	0.19	7.70	9,365
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	38.9	38.7	47.4	64.9	0.11	1.91	2.90	4.80	1.76	0.48	2.24	—	13,124	13,124	0.49	0.28	0.17	13,221
2027	1.01	0.86	5.02	9.85	0.01	0.14	1.36	1.50	0.13	0.32	0.45	—	2,372	2,372	0.06	0.11	0.13	2,407
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	5.15	4.75	17.2	25.7	0.04	0.66	1.52	2.18	0.61	0.30	0.91	—	5,101	5,101	0.18	0.12	1.85	5,143
2027	0.14	0.12	0.70	1.40	< 0.005	0.02	0.19	0.21	0.02	0.04	0.06	—	331	331	0.01	0.02	0.30	336
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.94	0.87	3.14	4.69	0.01	0.12	0.28	0.40	0.11	0.06	0.17	—	844	844	0.03	0.02	0.31	852
2027	0.03	0.02	0.13	0.26	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	54.7	54.7	< 0.005	< 0.005	0.05	55.6

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.	7.89	7.55	3.18	36.5	0.07	0.06	6.53	6.59	0.05	1.66	1.71	62.8	9,352	9,415	6.78	0.38	24.8	9,723
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.97	6.67	3.33	24.6	0.07	0.05	6.53	6.59	0.05	1.66	1.71	62.8	8,877	8,940	6.79	0.39	1.62	9,228
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	7.42	7.09	3.44	30.6	0.07	0.06	6.53	6.59	0.05	1.66	1.71	62.8	8,956	9,019	6.79	0.39	11.3	9,318
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.35	1.29	0.63	5.58	0.01	0.01	1.19	1.20	0.01	0.30	0.31	10.4	1,483	1,493	1.12	0.07	1.87	1,543

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	3.93	3.63	3.11	29.0	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,548	7,548	0.30	0.33	23.8	7,679
Area	3.96	3.93	0.07	7.49	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	20.0	20.0	< 0.005	< 0.005	—	20.1
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	1,743	1,743	0.17	0.02	—	1,754
Water	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Waste	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Total	7.89	7.55	3.18	36.5	0.07	0.06	6.53	6.59	0.05	1.66	1.71	62.8	9,352	9,415	6.78	0.38	24.8	9,723
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.70	3.40	3.33	24.6	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,092	7,092	0.31	0.35	0.62	7,203
Area	3.27	3.27	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	1,743	1,743	0.17	0.02	—	1,754
Water	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Waste	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Total	6.97	6.67	3.33	24.6	0.07	0.05	6.53	6.59	0.05	1.66	1.71	62.8	8,877	8,940	6.79	0.39	1.62	9,228
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	3.67	3.37	3.39	25.5	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,158	7,158	0.31	0.35	10.3	7,280
Area	3.74	3.72	0.05	5.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	13.7	13.7	< 0.005	< 0.005	—	13.8
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	1,743	1,743	0.17	0.02	—	1,754
Water	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Waste	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Total	7.42	7.09	3.44	30.6	0.07	0.06	6.53	6.59	0.05	1.66	1.71	62.8	8,956	9,019	6.79	0.39	11.3	9,318
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.67	0.61	0.62	4.65	0.01	0.01	1.19	1.20	0.01	0.30	0.31	—	1,185	1,185	0.05	0.06	1.70	1,205
Area	0.68	0.68	0.01	0.94	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.27	2.27	< 0.005	< 0.005	—	2.28
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	289	289	0.03	< 0.005	—	290
Water	—	—	—	—	—	—	—	—	—	—	—	1.70	6.85	8.55	0.18	< 0.005	—	14.2
Waste	—	—	—	—	—	—	—	—	—	—	—	8.70	0.00	8.70	0.87	0.00	—	30.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	0.17
Total	1.35	1.29	0.63	5.58	0.01	0.01	1.19	1.20	0.01	0.30	0.31	10.4	1,483	1,493	1.12	0.07	1.87	1,543

3. Construction Emissions Details

3.1. Site Preparation (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	3.45	2.89	25.8	34.2	0.06	1.03	—	1.03	0.95	—	0.95	—	6,164	6,164	0.25	0.05	—	6,186

Dust From Material Movement	—	—	—	—	—	—	0.83	0.83	—	0.09	0.09	—	—	—	—	—	—	—
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	3.45	2.89	25.8	34.2	0.06	1.03	—	1.03	0.95	—	0.95	—	6,164	6,164	0.25	0.05	—	6,186
Dust From Material Movement	—	—	—	—	—	—	0.83	0.83	—	0.09	0.09	—	—	—	—	—	—	—
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	1.46	1.23	10.9	14.5	0.03	0.44	—	0.44	0.40	—	0.40	—	2,618	2,618	0.11	0.02	—	2,627
Dust From Material Movement	—	—	—	—	—	—	0.35	0.35	—	0.04	0.04	—	—	—	—	—	—	—
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	0.27	0.22	2.00	2.65	< 0.005	0.08	—	0.08	0.07	—	0.07	—	433	433	0.02	< 0.005	—	435

Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.01	0.01	—	—	—	—	—	—	—
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	0.21	0.19	0.18	3.23	0.00	0.00	0.59	0.59	0.00	0.14	0.14	—	621	621	0.03	0.02	2.10	630
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	0.20	0.18	0.20	2.45	0.00	0.00	0.59	0.59	0.00	0.14	0.14	—	571	571	0.01	0.02	0.05	578
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	0.09	0.08	0.09	1.09	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	245	245	< 0.005	0.01	0.39	249
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	0.02	0.01	0.02	0.20	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	40.6	40.6	< 0.005	< 0.005	0.06	41.2
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 (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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.69	2.26	20.2	26.4	0.05	0.86	—	0.86	0.79	—	0.79	—	5,041	5,041	0.20	0.04	—	5,059
Dust From Material Movement	—	—	—	—	—	—	0.83	0.83	—	0.09	0.09	—	—	—	—	—	—	—
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	0.37	0.31	2.77	3.61	0.01	0.12	—	0.12	0.11	—	0.11	—	691	691	0.03	0.01	—	693
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.01	0.01	—	—	—	—	—	—	—
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	0.07	0.06	0.51	0.66	< 0.005	0.02	—	0.02	0.02	—	0.02	—	114	114	< 0.005	< 0.005	—	115

Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.13	1.63	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	380	380	0.01	0.01	0.04	385
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	0.04	0.01	1.11	0.27	0.01	0.02	0.26	0.28	0.02	0.07	0.09	—	967	967	0.02	0.15	0.05	1,014
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	52.8	52.8	< 0.005	< 0.005	0.08	53.5
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
Hauling	0.01	< 0.005	0.15	0.04	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	132	132	< 0.005	0.02	0.12	139
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.74	8.74	< 0.005	< 0.005	0.01	8.86
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	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.9	21.9	< 0.005	< 0.005	0.02	23.0

3.5. 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	0.62	0.52	4.31	4.99	0.01	0.15	—	0.15	0.14	—	0.14	—	771	771	0.03	0.01	—	774
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	0.62	0.52	4.31	4.99	0.01	0.15	—	0.15	0.14	—	0.14	—	771	771	0.03	0.01	—	774
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	0.31	0.26	2.17	2.51	< 0.005	0.08	—	0.08	0.07	—	0.07	—	388	388	0.02	< 0.005	—	389
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	0.40	0.46	< 0.005	0.01	—	0.01	0.01	—	0.01	—	64.2	64.2	< 0.005	< 0.005	—	64.4
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	0.45	0.40	0.37	6.82	0.00	0.00	1.24	1.24	0.00	0.29	0.29	—	1,311	1,311	0.06	0.05	4.44	1,330
Vendor	0.02	0.01	0.45	0.14	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	425	425	0.01	0.07	1.16	446
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	0.43	0.38	0.42	5.18	0.00	0.00	1.24	1.24	0.00	0.29	0.29	—	1,205	1,205	0.02	0.05	0.12	1,220
Vendor	0.02	0.01	0.47	0.14	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	425	425	0.01	0.07	0.03	445
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	0.21	0.19	0.23	2.72	0.00	0.00	0.62	0.62	0.00	0.15	0.15	—	613	613	0.01	0.02	0.96	622
Vendor	0.01	< 0.005	0.24	0.07	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	214	214	< 0.005	0.03	0.25	224
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	0.03	0.04	0.50	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	102	102	< 0.005	< 0.005	0.16	103
Vendor	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	35.4	35.4	< 0.005	0.01	0.04	37.0
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 (2027) - 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 Equipm	0.58	0.49	4.19	4.94	0.01	0.13	—	0.13	0.12	—	0.12	—	771	771	0.03	0.01	—	774
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	0.08	0.07	0.58	0.68	< 0.005	0.02	—	0.02	0.02	—	0.02	—	107	107	< 0.005	< 0.005	—	107
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	0.11	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.7	17.7	< 0.005	< 0.005	—	17.8
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	0.41	0.36	0.37	4.77	0.00	0.00	1.24	1.24	0.00	0.29	0.29	—	1,183	1,183	0.02	0.05	0.10	1,197
Vendor	0.02	0.01	0.46	0.14	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	417	417	0.01	0.06	0.03	436
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	0.06	0.05	0.06	0.69	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	166	166	< 0.005	0.01	0.24	168
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	57.8	57.8	< 0.005	0.01	0.06	60.5
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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.5	27.5	< 0.005	< 0.005	0.04	27.8
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.57	9.57	< 0.005	< 0.005	0.01	10.0
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. Paving (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	0.87	0.72	6.47	8.97	0.01	0.25	—	0.25	0.23	—	0.23	—	1,330	1,330	0.05	0.01	—	1,335
Paving	0.23	0.23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.06	0.05	0.46	0.64	< 0.005	0.02	—	0.02	0.02	—	0.02	—	94.8	94.8	< 0.005	< 0.005	—	95.1
Paving	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.01	0.01	0.08	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.7	15.7	< 0.005	< 0.005	—	15.7
Paving	< 0.005	< 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	0.07	1.26	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	241	241	0.01	0.01	0.82	245
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	0.01	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.0	16.0	< 0.005	< 0.005	0.03	16.2
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	—	2.65	2.65	< 0.005	< 0.005	< 0.005	2.69
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

3.11. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.21	1.82	2.07	< 0.005	0.05	—	0.05	0.05	—	0.05	—	287	287	0.01	< 0.005	—	288
Architectural Coatings	37.5	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.02	0.01	0.12	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19.6	19.6	< 0.005	< 0.005	—	19.7
Architectural Coatings	2.57	2.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.25	3.25	< 0.005	< 0.005	—	3.26
Architectural Coatings	0.47	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	0.09	0.08	0.08	1.04	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	241	241	< 0.005	0.01	0.02	244
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	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.7	16.7	< 0.005	< 0.005	0.03	16.9
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
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	—	2.77	2.77	< 0.005	< 0.005	< 0.005	2.81
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	3.93	3.63	3.11	29.0	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,548	7,548	0.30	0.33	23.8	7,679
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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	3.93	3.63	3.11	29.0	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,548	7,548	0.30	0.33	23.8	7,679
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	3.70	3.40	3.33	24.6	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,092	7,092	0.31	0.35	0.62	7,203
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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	3.70	3.40	3.33	24.6	0.07	0.05	6.53	6.59	0.05	1.66	1.71	—	7,092	7,092	0.31	0.35	0.62	7,203
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.67	0.61	0.62	4.65	0.01	0.01	1.19	1.20	0.01	0.30	0.31	—	1,185	1,185	0.05	0.06	1.70	1,205
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

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.67	0.61	0.62	4.65	0.01	0.01	1.19	1.20	0.01	0.30	0.31	—	1,185	1,185	0.05	0.06	1.70	1,205

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	1,683	1,683	0.16	0.02	—	1,693
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	60.7	60.7	0.01	< 0.005	—	61.1
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,743	1,743	0.17	0.02	—	1,754
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	1,683	1,683	0.16	0.02	—	1,693

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	60.7	60.7	0.01	< 0.005	—	61.1
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,743	1,743	0.17	0.02	—	1,754
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	279	279	0.03	< 0.005	—	280
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	10.1	10.1	< 0.005	< 0.005	—	10.1
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	289	289	0.03	< 0.005	—	290

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
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

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	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	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	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	0.00	0.00	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	3.01	3.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.26	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.69	0.66	0.07	7.49	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	20.0	20.0	< 0.005	< 0.005	—	20.1
Total	3.96	3.93	0.07	7.49	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	20.0	20.0	< 0.005	< 0.005	—	20.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	3.01	3.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.26	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.27	3.27	0.00	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	0.55	0.55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.05	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.09	0.08	0.01	0.94	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.27	2.27	< 0.005	< 0.005	—	2.28
Total	0.68	0.68	0.01	0.94	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.27	2.27	< 0.005	< 0.005	—	2.28

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	10.3	41.3	51.6	1.06	0.03	—	85.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	1.70	6.85	8.55	0.18	< 0.005	—	14.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.70	6.85	8.55	0.18	< 0.005	—	14.2

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.25	0.00	—	184
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Condo/T	—	—	—	—	—	—	—	—	—	—	—	8.70	0.00	8.70	0.87	0.00	—	30.4
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	8.70	0.00	8.70	0.87	0.00	—	30.4

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.00	1.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	0.17
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	0.17

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
Site Preparation	Site Preparation	2/1/2026	7/31/2026	6.00	155	—
Grading	Grading	2/1/2026	3/31/2026	6.00	50.0	—
Building Construction	Building Construction	6/1/2026	2/28/2027	6.00	234	—
Paving	Paving	5/1/2026	5/31/2026	6.00	26.0	—
Architectural Coating	Architectural Coating	11/1/2026	11/30/2026	6.00	25.0	—

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	Tractors/Loaders/Backhoes	Diesel	Average	7.00	8.00	84.0	0.37
Site Preparation	Bore/Drill Rigs	Diesel	Average	1.00	8.00	83.0	0.50
Site Preparation	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Site Preparation	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Site Preparation	Crawler Tractors	Diesel	Average	1.00	8.00	87.0	0.43
Site Preparation	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Pumps	Diesel	Average	1.00	8.00	11.0	0.74
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46
Site Preparation	Welders	Diesel	Average	1.00	8.00	46.0	0.45

Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Average	5.00	8.00	84.0	0.37
Grading	Bore/Drill Rigs	Diesel	Average	1.00	8.00	83.0	0.50
Grading	Crawler Tractors	Diesel	Average	1.00	8.00	87.0	0.43
Grading	Pumps	Diesel	Average	1.00	8.00	11.0	0.74
Grading	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Grading	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46
Building Construction	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Building Construction	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Building Construction	Trenchers	Diesel	Average	2.00	8.00	40.0	0.50
Building Construction	Aerial Lifts	Diesel	Average	1.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Paving	Pressure Washers	Diesel	Average	1.00	8.00	14.0	0.30
Paving	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Pressure Washers	Diesel	Average	1.00	8.00	14.0	0.30
Architectural Coating	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73

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	45.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	14.3	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	95.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	14.1	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	19.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	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

Non-applicable. No control strategies activated by user.

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	283,338	94,446	0.00	0.00	13,314

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	104	0.00	—
Grading	0.00	5,710	104	0.00	—
Paving	0.00	0.00	0.00	0.00	5.09

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
Condo/Townhouse	—	0%
Parking Lot	1.68	100%
Other Asphalt Surfaces	0.61	100%
Other Non-Asphalt Surfaces	2.81	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	346	0.03	< 0.005
2027	0.00	346	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
Condo/Townhouse	950	950	950	346,750	9,227	9,227	9,227	3,367,825
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	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

Hearth Type	Unmitigated (number)
Condo/Townhouse	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	132

Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

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)
283338	94,446	0.00	0.00	13,314

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

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)
Condo/Townhouse	1,774,097	346	0.0330	0.0040	0.00
Parking Lot	64,047	346	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	346	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	346	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)
Condo/Townhouse	5,368,938	1,328,057
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Condo/Townhouse	97.5	—
Parking Lot	0.00	—
Other Asphalt Surfaces	0.00	—
Other Non-Asphalt Surfaces	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
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Condo/Townhouse	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

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)

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

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

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	27.8	annual days of extreme heat
Extreme Precipitation	2.60	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	9.89	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	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	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	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
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	91.1
AQ-PM	49.2
AQ-DPM	31.8
Drinking Water	10.2
Lead Risk Housing	16.1
Pesticides	27.2
Toxic Releases	23.1
Traffic	72.3
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	22.1
Haz Waste Facilities/Generators	23.7
Impaired Water Bodies	0.00
Solid Waste	52.9
Sensitive Population	—
Asthma	42.3
Cardio-vascular	74.9
Low Birth Weights	9.85
Socioeconomic Factor Indicators	—
Education	58.9
Housing	12.8
Linguistic	7.38
Poverty	50.7
Unemployment	30.9

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	31.83626331
Employed	9.39304504
Median HI	19.47901963
Education	—
Bachelor's or higher	31.46413448
High school enrollment	100
Preschool enrollment	61.41408957
Transportation	—
Auto Access	91.71050943
Active commuting	43.93686642
Social	—
2-parent households	8.456306942
Voting	25.54856923
Neighborhood	—
Alcohol availability	85.78211215
Park access	2.194276915
Retail density	15.48825869
Supermarket access	15.07763377
Tree canopy	1.077890414
Housing	—
Homeownership	92.2751187
Housing habitability	54.38213782
Low-inc homeowner severe housing cost burden	5.658924676
Low-inc renter severe housing cost burden	73.36070833
Uncrowded housing	54.63877839
Health Outcomes	—

Insured adults	13.51212627
Arthritis	4.6
Asthma ER Admissions	63.2
High Blood Pressure	6.0
Cancer (excluding skin)	16.1
Asthma	21.6
Coronary Heart Disease	3.6
Chronic Obstructive Pulmonary Disease	5.0
Diagnosed Diabetes	23.2
Life Expectancy at Birth	14.6
Cognitively Disabled	97.6
Physically Disabled	26.6
Heart Attack ER Admissions	35.8
Mental Health Not Good	30.2
Chronic Kidney Disease	7.4
Obesity	24.6
Pedestrian Injuries	72.5
Physical Health Not Good	21.6
Stroke	8.8
Health Risk Behaviors	—
Binge Drinking	69.8
Current Smoker	21.9
No Leisure Time for Physical Activity	24.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	19.9
Elderly	29.3

English Speaking	74.5
Foreign-born	34.9
Outdoor Workers	34.1
Climate Change Adaptive Capacity	—
Impervious Surface Cover	81.9
Traffic Density	49.5
Traffic Access	23.0
Other Indices	—
Hardship	81.8
Other Decision Support	—
2016 Voting	40.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	27.0
Healthy Places Index Score for Project Location (b)	20.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
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	According to the site plans, the project would encompass a total area of 7.95 acres
Construction: Construction Phases	Based on applicant provided information
Construction: Off-Road Equipment	Based on applicant provided information
Operations: Hearths	No fireplaces or woodstoves based on applicant provided information
Operations: Energy Use	All-electric appliances. Natural gas default consumption was converted and added to default kWh consumption.
Construction: Dust From Material Movement	Based on applicant provided information
Operations: Vehicle Data	Based on Traffic Study prepared by Translution Inc.

Appendix B

Biological Resources Assessment

Biological Resource Assessment for the Cypress Sand Project

Prepared for:

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Prepared by:

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June 2024

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APPENDICES

Appendix A Jurisdictional Delineation

Appendix B Special Status Plant Species Potential Occurrence Determination

Appendix C Special Status Wildlife Species Potential Occurrence Determination

1.0 Introduction

1.1 Purpose and Approach

On behalf of Brian F. Smith and Associates, Carlson Strategic Land Solutions (CSLS) prepared this Biological Resource Assessment for the approximately 10-acre proposed Cypress Sand Project located within the City of Menifee. The purpose of this study is to satisfy the requirements of the California Environmental Quality Act (CEQA) and incorporate the findings from the field survey conducted August 5, 2022, a Jurisdictional Delineation (Appendix A).

1.2 Sources

This Biological Resource Assessment (BRA) is based on information compiled through field reconnaissance and appropriate reference materials. A general biological survey, vegetation mapping, jurisdictional waters and wetlands delineation, and focused burrowing owl (*Athene cunicularia, [BUOW]*) habitat assessment was conducted by CSLS Biologists on the Project site and surrounding 500-feet. The information sources used in preparation of this Biological Resource Report are provided in Section 9.0, *References*.

1.3 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 10-acre Cypress Sand Project site.
- Study Area: the area evaluated during the field survey, including the approximately 10-acre Project site and the surrounding 500-feet (150-meters).
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.4 Project Location

The approximately 10-acre Project site is located in the City of Menifee, Riverside County California on the U.S Geological Survey (USGS) Map *Romoland* topographic map. The site is located south of Chambers Avenue, west of Antelope Road, east of Chatham Lane, and north of Tioga Lane (Figures 1 and 2). The Assessor's Parcel Number (APN) for the site is 333-050-034. The City is a participant to the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP); therefore, the Project is subject to MSHCP surveys.

1.5 Existing Conditions

The approximately 10-acre Project site is characterized as ruderal and disturbed vegetation communities and a single drainage located within the northern Project site

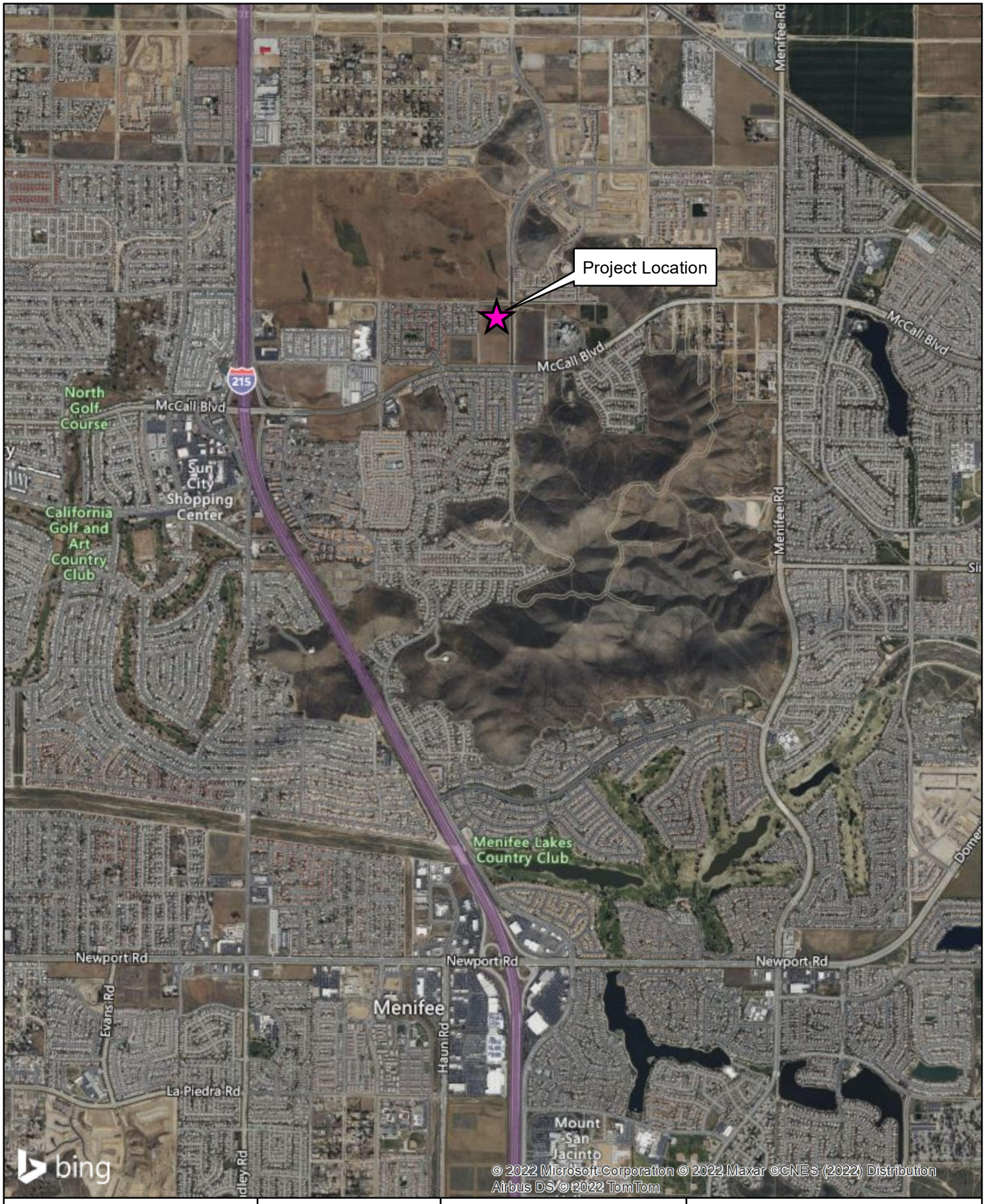
boundary. Immediate surrounding land uses include residential development to the west, construction to the north and undeveloped land to the south and east.

1.6 Scope of Study

The scope of this BRA encompasses descriptions of the Project site, methods of study, and existing site conditions including vegetation communities and the potential for sensitive biological resources. Further, avoidance, minimization, and/or mitigation measures are included within this BRA to reduce any potentially significant impacts to sensitive species.

2.0 Project Description

The proposed Project involves the development of a gated apartment complex including seven multi-unit buildings, totaling 135 residential units, along with associated amenities and parking. The Project includes a gross area of 9.71 acres and 7.94 net acres, including 130,400 square feet of residential development at a density of 14 dwelling units per acre. The proposed Project includes 56 one-bedroom units and 80 two-bedroom units along with 268 total parking spaces and amenities such as a 2,049 square foot clubhouse (including fitness center), lanai, mail room, pool, spa, basketball and pickleball courts, tot lot, and dog walk.



GIS Prepared By:
Carlson SLS

Created: July 29, 2022

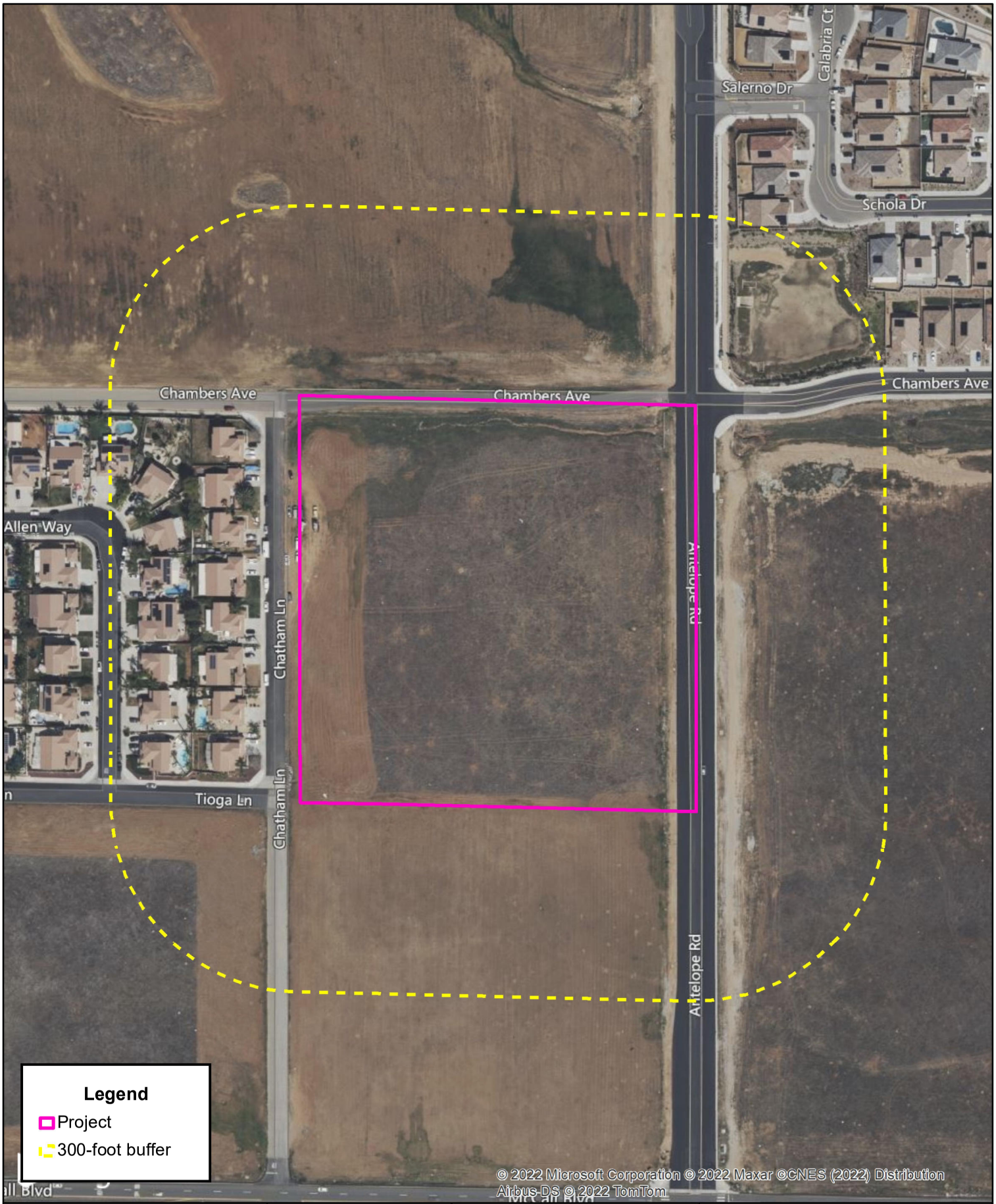
0 250 500 1,000 1,500 2,000 2,500 Feet
1 inch = 2,500 feet

Data Source: Bing Map (2021)

Cypress Sand Project

Regional Location Map

Figure 1



GIS Prepared By:
Carlson SLS

Created: July 29, 2022

0 25 50 100 150 200 Feet
1 inch = 200 feet

Data Source: Bing Map (2021)

Cypress Sand Project

Project Location Map

Figure 2

3.0 Regulatory Framework

The following discussion describes the plant and wildlife species present, or potentially present, within the Project site that have been afforded special recognition by Federal, State, or local resource conservation agencies and organizations. These species have declining or limited population sizes, typically resulting from habitat loss. Also discussed are sensitive habitats that are unique, of relatively limited distribution, or of particular value to wildlife. Protected sensitive species are classified by either Federal or State resource management agencies, or both, as threatened or endangered, under provisions of the Federal and State Endangered Species Acts (EESA and CESA, respectively).

3.1 Federal Sensitive Resource Protection and Classifications

3.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (ESA) of 1973 defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the ESA, unless properly permitted, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of ESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action which could affect a federally listed plant or animal species, the property owner and agency are required to consult with USFWS pursuant to Section 7 of the ESA if there is a federal nexus, or pursuant to Section 10 of the ESA. Section 9(a)(2)(b) of the ESA addresses the protections afforded to listed plants. All references to federally-protected species in this BRA include the most current published status or candidate category to which each species has been assigned by USFWS.

3.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) protects individuals as well as any part, nest, or eggs of any bird listed as migratory. In practice, MBTA protects against activities that potentially impact migratory birds and contains conditions that require pre-disturbance surveys for nesting birds during the breeding season. In the event nesting is observed, a buffer area with a specified radius must be established, within which no disturbance or intrusion is allowed until the young have fledged and left the nest, or it has been determined that the nest has failed. The size of the buffer area varies with species and local circumstances (e.g., presence of busy roads, intervening topography, etc.), and is

based on the professional judgment of a monitoring biologist. A list of migratory bird species protected under the MBTA is published by USFWS.

3.1.3 Federal Clean Water Act, Section 401 and 404

The Clean Water Act (CWA), Section 401 provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator to obtain a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The RWQCB administers the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by the USACE that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The USACE implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the United States Environmental Protection Agency in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

Under Section 401 of the CWA, the local RWQCB must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. Compensatory mitigation for impacts to wetlands and/or waters of the state is required.

3.1.4 Waters of the United States and Wetlands

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and fall under the jurisdiction of several regulatory agencies. The Corps exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as the portion that falls within the limits of the Ordinary High-Water Mark (OHWM). The OHWM is defined as the "line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

The definition of waters of the United States has undergone several iterations, including a much more streamlined definition which was published and formally adopted in April 2020. However, in August 2021, the April 2020 Navigable Waters definition was challenged in the case *Pascua Yaqui Tribe v. Environmental Protection Agency*. In light of this case and subsequent order from US District Court for the District of Arizona, the U.S. Environmental Protection Agency (EPA) and Corps have halted implementation of the Navigable Waters Protection Rule from 2020 and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime. Then in March 2023 following a Supreme Court decision, the rule was once again changed and finalized to codify the pre-2015 definition with some revisions to the definition wetlands. On August 29, 2023 the EPA and Corps issued a final rule to amend the prior definition of Waters of the United States. The final rule conforms with the definition of Waters of the United States to the US Supreme Court's May 25, 2023 decision in the case *Sackett v. Environmental Protection Agency*. As a result of the case, key aspects of the regulatory text have been amended to conform to the Court's decision, which revised the definitions of Waters of the United States and became effective on September 8, 2023.

The September 2023 ruling codified the term (a) waters of the United States to mean:

1. Waters which are:
   i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
   ii. The territorial seas; or
   iii. Interstate waters;
2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
3. Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
   i. Waters identified in paragraph (a)(1) of this section; or
   ii. Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
   iii. Waters identified in paragraph (a)(2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section;
5. Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of

water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

6. Intrastate lakes and ponds, streams, or wetlands not identified in paragraphs (a)(1) through (4) of this section:
   i. That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3)(i) of this section; or
   ii. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by Corps as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[a]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present and, as outlined within the September 2023 ruling, have adjacency with relative permanent, standing or continuously flowing bodies of water with continuous connection to Waters of the US. Wetlands must meet the parameters as outlined above classified as a wetland by Corps.

It is important to note that the RWQCB definition of wetland was redefined, and the new definition went into effect May 28, 2020. The definition of a wetland is as follows: An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes, or the area lacks vegetation. This RWQCB modified three-parameter definition is similar to the federal definition in that it identifies three wetland characteristics that determine the presence of a wetland: wetland hydrology, hydric soils, and hydrophytic vegetation. Unlike the federal definition, however, the RWQCB wetland definition allows for the presence of hydric substrates as a criterion for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5% cover) to be considered a wetland.

Examples of waters that would be considered wetlands by the RWQCB definition, but not by the federal wetland definition, are non-vegetated wetlands, or wetlands characterized by exposed bare substrates like mudflats and playas, as long as they meet the three-parameters as described in the RWQCB definition. It is important to note that while the Corps may not designate a feature as a wetland, that feature could be

considered a special aquatic site or other water of the U.S. by the Corps and potentially subject to Corps' jurisdiction.

3.2 State Sensitive Resource Protection

3.2.1 California Endangered Species Act

The California Endangered Species Act (CESA) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under the CESA. For projects that would affect a listed species under both the CESA and the ESA, compliance with the ESA would satisfy the CESA if CDFW determines that the federal incidental take authorization is "consistent" with the CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a species listed under the CESA only, the project operator would have to apply for a take permit under Section 2081(b).

3.2.2 Protection of Birds

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Activities that result in the abandonment of an active bird of prey nest may also be considered in violation of this code. In addition, California Fish and Game Code, Section 3511 prohibits the taking of any bird listed as fully protected, and California Fish and Game Code, Section 3515 states that is it unlawful to take any non-game migratory bird protected under the MBTA.

3.2.3 California Fish and Game Code

Section 1602 of the California Fish and Game Code requires any entity (e.g., person, state or local government agency, or public utility) who proposes a project that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake to notify CDFW of the proposed project. CDFW reviews the proposed project to determine whether it affects streambed habitats within the project area. CDFW may then place conditions in the Section 1602 Streambed Alteration Agreement to avoid, minimize, and mitigate any potentially significant adverse impacts within CDFW jurisdictional limits.

3.2.4 California Fully Protected Species

California fully protected species are described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

3.2.5 Native Plant Protection Act

California's Native Plant Protection Act (NPPA) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The project operator is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

3.2.6 California Native Plant Society

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California (CNPS 2012). The list serves as the candidate list for Threatened and Endangered by CDFW. CNPS has developed five categories of rarity, of which Ranks 1A, 1B, and 2 are particularly considered sensitive.

Sensitive species that occur or potentially could occur within the Project site are based on one or more of the following: (1) the direct observation of the species within the project site during any field surveys; (2) a record reported in the CNDDB; and (3) the project site is within known distribution of a species and contains appropriate habitat.

3.2.7 Sensitive Plant Communities

Sensitive plant communities include those habitat types considered sensitive by resource agencies, namely CDFW, due to their scarcity and/or their ability to support State and Federally-listed Endangered, Threatened, and Rare vascular plants, as well as several sensitive bird and reptile species. CDFW maintains a natural plant community list, the List of California Terrestrial Natural Communities. Sensitive natural communities (also referred to by CDFW as 'rare', 'special-status', or 'special concern') are identified on the list by an asterisk and are considered high priority vegetation types (CDFW 2003; CDFW 2000).

3.2.8 Porter-Cologne Water Quality Act

The RWQCB also has jurisdiction over waters deemed "isolated" or not subject to Section 404 jurisdiction under the Solid Waste Agency of Northern Cook County v. USACE decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required to obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

3.3 Local Sensitive Resource Protection and Classifications

3.3.1 Western Riverside Multiple Species Habitat Conservation Plan (MSHCP)

The Project site is located within the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP is a comprehensive plan that includes portions of the County of Riverside and numerous cities. The MSHCP plans for conservation of 146 species and proposes a reserve system of approximately 500,000 acres. The MSHCP is intended to contribute to the economic viability of the County of Riverside by providing landowners, developers, and public infrastructure projects a streamlined regulatory process.

The Western Riverside County Conservation Authority (RCA) MSHCP Information Application website was reviewed to verify any overlays that may occur on the Project site. Regardless of other overlays, MSHCP Section 6.1.2, *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools*, is applicable to all projects within the MSHCP and describes the process through which protection of riparian/riverine areas, and vernal pools will occur within the MSHCP Area. Protection of these resources is important for a number of MSHCP conservation objectives. An assessment of a Project's potentially significant effects on riparian/riverine areas and vernal pools is required. Guidelines for determining whether or not these resources exist on site are described as follows:

- Riparian/Riverine Areas include "lands which contain habitat dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens which occur close to or which depend upon soil moisture from a nearby fresh water source or areas with fresh water flow during all or a portion of the year." Riparian/riverine areas under the MSHCP also include drainage areas that are vegetated or have upland (non-riparian/riverine) vegetation and that drain directly into an area that is described for conservation under the MSHCP (or areas already conserved).

- Vernal Pools are described by the MSHCP as "seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season." This definition excludes artificially created wetlands created for proving wetlands habitat or human actions to create open waters or altering natural streams demonstrating characteristic as described above.

4.0 Methods of Study

4.1 Approach

This BRA is based on information compiled through field reconnaissance and appropriate reference materials. Surveys included a general biological survey and vegetation mapping, focused burrowing owl habitat assessment, narrow endemic plant survey, and a jurisdictional waters and wetlands delineation.

4.2 Literature Review

Assessment of the Project site began with a review of relevant literature on the biological resources of the site and the surrounding vicinities. The California Natural Diversity Database (CNDDB), a CDFW species account database, was reviewed for all pertinent information regarding the localities of known observations of sensitive species and habitats in the vicinity of the site (CNDDB 2022). The vicinity of the site included the following USGS topographic quadrangles: Romoland, Perris, Lakeview, Winchester, Bachelor Mountain, Murrieta, Wildomar, Lake Elsinore, and Steele Peak. Federal register listings, protocols, and species data provided by the US Fish and Wildlife Service (USFWS) (USFWS 2022a), CDFW, and the California Native Plant Society (CNPS) (CNPS 2022) were reviewed in conjunction with anticipated listed species with potential to occur within the project vicinity. Additional data sources reviewed include USFWS critical habitat maps (USFWS 2022b) and United States Department of Agriculture Natural Resources Conservation Service (NRCS) soils mapping (NRCS 2022). In addition, numerous regional flora and fauna field guides were utilized to assist in the identification of species and suitable habitats. A list of all relevant references reviewed is included in Section 9.0, *References*.

4.2.1 Plant Community Mapping

Plant communities were mapped in the field directly onto a 200-scale (1" = 200') focusing on dominant plant species. Plant species were identified using plant field and taxonomical guides, such as The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al. 2012). Vegetation communities were characterized utilizing vegetation alliances in accordance with The Manual of California Vegetation, Second Edition (MCVII) (Sawyer et al. 2009). Where necessary, deviations were made on best professional judgment when areas did not fit into a specific habitat description provided by MCVII. After completing the fieldwork, the plant community polygons were digitized using Geographic Information System (GIS) technology to calculate acreages.

4.2.2 Sensitive Habitats

Sensitive habitats are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. Sensitive habitats are often threatened with local extirpation and are therefore considered valuable biological resources. Sensitive Habitats are considered "sensitive" by the California Native Plant Society (CNPS), and CDFW if they meet any of the criteria listed below.

- The habitat is recognized and considered sensitive by CDFW, USFWS, and/or special interest groups such as CNPS.
- The habitat is under the jurisdiction of the Corps pursuant to Section 404 of the CWA.
- The habitat is under the jurisdiction of CDFW pursuant to Sections 1600 through 1612 of the California Fish and Game Code.
- The habitat is known or believed to be of high priority for inventory in the California Natural Diversity Database (CNDDB).
- The habitat is considered regionally rare.
- The habitat has undergone a largescale reduction due to increased encroachment and development.
- The habitat supports special status plant and/or wildlife species (defined below).
- The habitat functions as an important corridor for wildlife movement.

4.2.3 Sensitive Plant Species

The potential for sensitive plant species was assessed based upon the known occurrence of species in the area as identified from CDFW, USFWS and CNPS databases, and the presence or absence of suitable habitat within each site. Suitable habitat is defined as areas with appropriate vegetation communities, soils and/or topography (elevation at MSL) to support sensitive plant species based on known occurrences in those habitats. The available literature, databases, and existing field conditions were reviewed and compared to identify sensitive plant species that have the potential to occur within the Project site (Appendix B). During the field assessment, any observed special plant species location(s) and extent(s) were recorded in field notes and mapped using GPS.

4.2.4 Critical Habitat

Under the ESA, the federal government is required to designate "critical habitat" for any species it lists under the ESA (Figure 3). Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitats. Section 3 of the ESA defines critical habitat as:

- The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection.

- The specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

"Conservation" means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the ESA is no longer necessary. Critical habitat receives protection under Section 7(a)(2) of the ESA through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a federal agency. Section 7(a)(2) also requires conferences on federal actions that are likely to result in the destruction or adverse modification of proposed critical habitat.

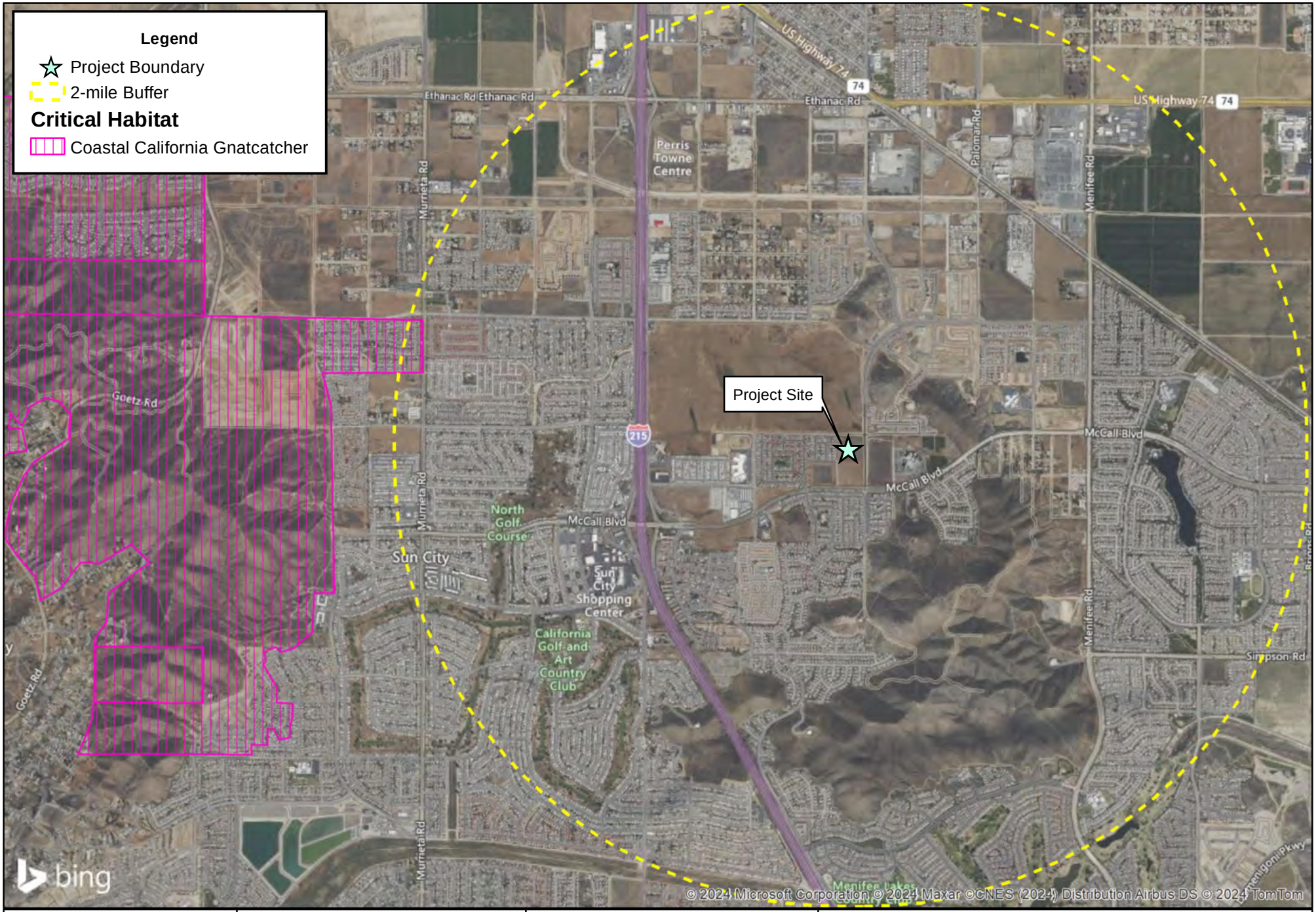
The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Project site occurs within any species' designated Critical Habitat. The USFWS regulatory mapping process for the designation of critical habitat is an imprecise, broad-based, mapping exercise of areas that may or may not include constituent elements of the critical habitat designation. Due to this approach in mapping, large areas are designated as critical habitat regardless of the existing habitat, and as a result may include developed areas, such as buildings, roads, hardscape, and other such facilities, as well as natural habitats.

The constituent elements of the critical habitat designation consider the physical and biological features needed for life processes and successful reproduction of the listed species. These included:

- Space for individual and population growth for normal behavior;
- Habitat cover or shelter;
- Food, water, or other nutritional or physiological requirements;
- Sites for breeding and rearing offspring; and
- Habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

4.2.5 Sensitive Wildlife Species

The potential for sensitive wildlife species was assessed based upon the known occurrence of species in the area as identified from CDFW and USFWS databases, and the presence or absence of suitable habitat within the site. Suitable habitat is defined as areas with appropriate vegetation communities and/or topography (elevation at MSL) to support sensitive wildlife species based on known occurrences in those habitats and/or CDFW and USFWS documented habitat descriptions for the species. The available literature, databases, and existing field conditions were reviewed and compared to identify sensitive wildlife species that have the potential to occur within the Project site (Appendix C).



GIS Prepared By:
Carlson SLS

Created: August 24, 2022

0 500 1,000 2,000 3,000 4,000 5,000 6,000 Feet
1 inch = 3,000 feet

Data Source: Bing Map

Cypress Sand Project
Critical Habitat Results

FIGURE 3

4.2.6 Regional Connectivity/Wildlife Movement Corridor

An analysis of wildlife movement was conducted based on information compiled from the literature, analysis of aerial photographs and topographic maps, direct observations made in the field during survey work, and an analysis of existing wildlife movement functions. Relative to corridor issues, the focus of this assessment was to determine if development of the Project site that would have significant impacts on the regional wildlife movement associated with the site and the immediate vicinity.

4.3 Field Investigations

A general biological survey, vegetation mapping and a delineation of jurisdictional waters and wetlands was conducted for the Project site by CSLS biologists Brianna Bernard and Justinne Manahan on August 5, 2022. During the field visit, the biologists assessed the existing habitat on the Project site. The plant communities observed were identified and mapped. The biologists paid special attention to those habitat areas that appeared to provide suitable habitat for special status plant and wildlife species. Aerial photographs and maps were used to assist in the delineation of plant community boundaries.

4.3.1 General Plant Inventory

All plant species observed during the general and focused surveys were either identified in the field or collected and later identified using taxonomic keys. Vegetation communities were characterized utilizing vegetation alliances in accordance with The Manual of California Vegetation, Second Edition (MCVII) (Sawyer et al. 2009). All plant species observed were recorded in field notes.

4.3.2 General Wildlife Inventory

All wildlife species observed on the Project site, as well as any diagnostic sign (call, tracks, nests, scat, remains, or other sign), were recorded in field notes. Binoculars and regional field guides were utilized for the identification of wildlife, as necessary. Wildlife taxonomy follows Stebbins (2003) and California Herps (2015) for amphibians and reptiles, the American Ornithologists' Union (1998) for birds, and Jameson and Peeters (1988) for mammals. All wildlife species detected were recorded in field notes.

4.4 MSHCP

The Project is not located within MSHCP survey areas for Criteria Area Plant Species, Amphibians, Mammals, or Special Linkage Areas. The Study Area was assessed for MSHCP Section 6.1.2 Riparian and Riverine Areas and associated species, MSHCP Section 6.1.3 Narrow Endemic Plants Species, and Section 6.3.2 Species Survey Requirements for the western burrowing owl (*Athene cunicularia hypugaea* [BUOW]) habitat (Figure 4).



GIS Prepared By:
Carlson SLS

Created: August 1, 2022

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Map

Cypress Sand Project

MSHCP Overlays

FIGURE 4

4.4.1 Section 6.1.2 Riparian/Riverine Areas and Vernal Pools

Volume I, Section 6.1.2 of the MSHCP describes the process through which protection of riparian/riverine areas and vernal pools would occur within the MSHCP Plan Area. The purpose is to ensure that the biological functions and values of these areas throughout the MSHCP Conservation Area are maintained. The MSHCP requires that as projects are proposed within the overall Plan Area, the effect of those projects on riparian/riverine areas and vernal pools must be addressed. The Study Area was evaluated for the presence/absence of MSHCP riparian/riverine areas and vernal pools. With respect to riparian habitat, the Study Area was evaluated for the potential habitat to support the special status species including the least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii traillii*), the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), listed fairy shrimp, and other species identified in Section 6.1.2 of the MSHCP.

The Project site was evaluated to determine the limits of (1) Corps jurisdiction pursuant to Section 404 of the CWA; (2) CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600 of the Fish and Game Code; and (3) MSHCP riparian/riverine areas and vernal pools. Suspected jurisdictional areas were field checked for the presence of definable channels and/or wetland vegetation, soils and hydrology. Suspected wetland habitat on the site were evaluated using the methodology set forth in the Corps' 1987 Wetland Delineation Manual (Wetland Manual) and the 2008 Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region Version 2.0 (Arid West Supplement). Any jurisdiction limits were recorded onto a 200-scale (1" = 200') color aerial photograph and a GPS unit paired with the ARCGIS Collector Application.

4.4.2 Section 6.1.3 Narrow Endemic Plant - Survey Area Number 3

The Project site falls within Narrow Endemic Plants (Survey Area Number 3). The CNDDB and MSHCP were reviewed to determine known occurrences of special- status plants in the region. Based on this information, a list of target plants (including their suitable habitats and soil) was developed and incorporated into a survey program to achieve the following goals: (1) characterize the vegetation associations and land use; (2) prepare a detailed floral compendium; and (3) document the distribution and abundance of any special-status plant species within the Project site.

General surveys were conducted to identify potential sensitive plant habitats, and to establish the accuracy of the data identified from the literature review and previous biological assessment and search. An aerial photograph and topographic map were used to determine the community types and other physical features that may support sensitive species or communities within the Project site and surrounding buffer area. The reconnaissance surveys also considered the guidelines adopted by CNPS and CDFW (Nelson 1984, CNPS 2001).

Where potentially suitable habitat was present, focused plant surveys included those MSCHP Covered Species identified by the NEPSSA Survey Area Number 3. For any locations with positive survey results, the MSHCP requires that 90 percent of those portions of the property that provide for long-term conservation value for the identified species shall be avoided until it is demonstrated that conservation goals for the particular species are met. Findings of equivalency shall be made demonstrating that the 90-percent standard has been met.

4.4.3 Section 6.3.2 Burrowing Owl Habitat Assessment

Prior to the field survey, available literature and databases including the California Natural Diversity Database, were reviewed to identify sensitive habitats and special status wildlife species, including BUOW in the vicinity of the Study Area. Consistent with the MSHCP Survey Instructions, pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

Consistent with the MSHCP guidelines, CSLS Biologists assessed the Project site and a 150-meter (approximately 500 feet) buffer zone around the Project boundary for BUOW Assessment. CSLS Biologist performed transects within the Project boundary. Without permission to access the buffer area, the biologist visually inspected the adjacent habitats with binoculars. Parcels of land that could not be accessed (e.g. private property) were viewed using binoculars from vantage points to survey for BUOW activity or signs thereof, as well as other nesting bird activity.

4.5 Jurisdictional Delineation

The purpose of the delineation was to assess the location, extent and acreage of "waters of the U.S." and/or wetlands under the jurisdiction of the Corps, "waters of the State" and/or wetlands under the jurisdiction of the RWQCB, and/or streambed and associated riparian habitat under the jurisdiction of CDFW. All areas were delineated using the protocol stipulated by CDFW under Section 1600-1607 of the California Fish and Wildlife Code and by the Corps under Section 404 of the Clean Water Act (CWA). Any wetlands were delineated using the procedures stipulated in the USACE Wetland Delineation Manual (Environmental Laboratory 1987) and Arid West Supplement (USACE 2008a and USACE 2008b).

The potential for Corps jurisdictional "waters of the U.S." was based primarily on the presence or absence of jurisdictional field indicators consistent with the Corps guidelines such as the presence of an Ordinary High-Water Mark (OHWM) and/or secondary indicators of hydrology, including evidence of the deposition of debris, scour, sediment sorting, and changes in vegetation. The extent of CDFW jurisdiction was assessed based on the limits of the defined bed and bank and includes riparian streambed associated vegetation, where applicable. If each of the denoted elements were met, data was collected to estimate the length and width of jurisdictional features potentially regulated by the resource agencies. Upon completion of the field work,

documentation of any identified jurisdictional wetlands, waters, and streambed was completed.

5.0 Results

5.1 Biological Survey

CSLS biologist Brianna Bernard and Justinne Manahan conducted an analysis of biological resources and jurisdictional waters within the Study Area on August 5, 2022, and burrowing owl habitat assessment on August 5, 2022, focused narrow endemic plant surveys on August 5, 2022. Details of the surveys can be found in the table below. CSLS biologists conducted all the surveys by foot, hiking all accessible areas. Any inaccessible or restricted areas were surveyed using binoculars. The vegetation, jurisdictional waters, and wildlife observed were documented. The following table summarized the field survey data.

Table 1. Survey Information

Survey Date	Time	Temp.	Surveys	Surveyors
August 5, 2022	0830 - 1025	78° F – 91° F	Biological Assessment, Jurisdictional Delineation, Burrowing Owl Habitat Assessment, and Narrow Endemic Plant Survey.	Brianna Bernard and Justinne Manahan

5.1.1 Vegetation Communities

The vegetation communities and habitat conditions were inspected to confirm presence and habitat quality of the vegetation found onsite. Vegetation mapping and acreages for each vegetation community is based on the observations of the field surveys, which are listed below in Table 1 and graphically depicted on Figure 5. Representative photographs of the vegetation communities can be found Figure 6 and 7.

The deviations from MCVII alliance categories includes disturbed vegetation community. The deviations were made due to the lack of alliances for these communities within MCVII. The field survey included the Project site and surrounding 500-foot buffer around the Project site to determine what vegetation types exist. As shown on Figure 5, the surrounding 500-foot buffer consists primarily of ruderal, grasslands, developed, and disturbed vegetation communities.

The general description of the habitat observed during the field survey are described below.

Table 2. Vegetation Communities Observed on the Project site[1]

Vegetation Community	Acreage
Disturbed	9.71
TOTAL	9.71

Notes:
1. Plant Communities within the surrounding 500-foot buffer is not included within the total acreage. Communities consists of ruderal, developed, and disturbed vegetation communities.

5.1.1.1 Disturbed

The entire Project site consists primarily of disturbed habitat. The disturbed habitat area is associated with regular maintenance activities (disked/mowed) likely due to fire abatement; and is sparsely vegetated by non-native weedy species including red-stemmed stork's-bill (*Erodium cicutarium*), Russian thistle (*Salsola australis*), mustard (*Hirschfeldia incana*), tocalote (*Centaurea melitensis*), field bindweed (*Convolvulus arvensis*), horseweed (*Conyza canadensis*), stinknet (*Oncosiphon piluifer*), prairie sunflower (*Helianthus petiolaris*), and red brome (*Bromus madritensis*). Scattered native species were observed and include: rattlesnake weed (*Chamaesyce albomarginata*), California aster (*Symphyotrichum chilense*), dove weed (*Croton setigerus*), vinegarweed (*Trichostema lanceolatum*), and desert wire lettuce (*Stephanomeria pauciflora*). Furthermore, the Project site was utilized by the adjacent residential neighborhood to park cars, RVs, and a boat.

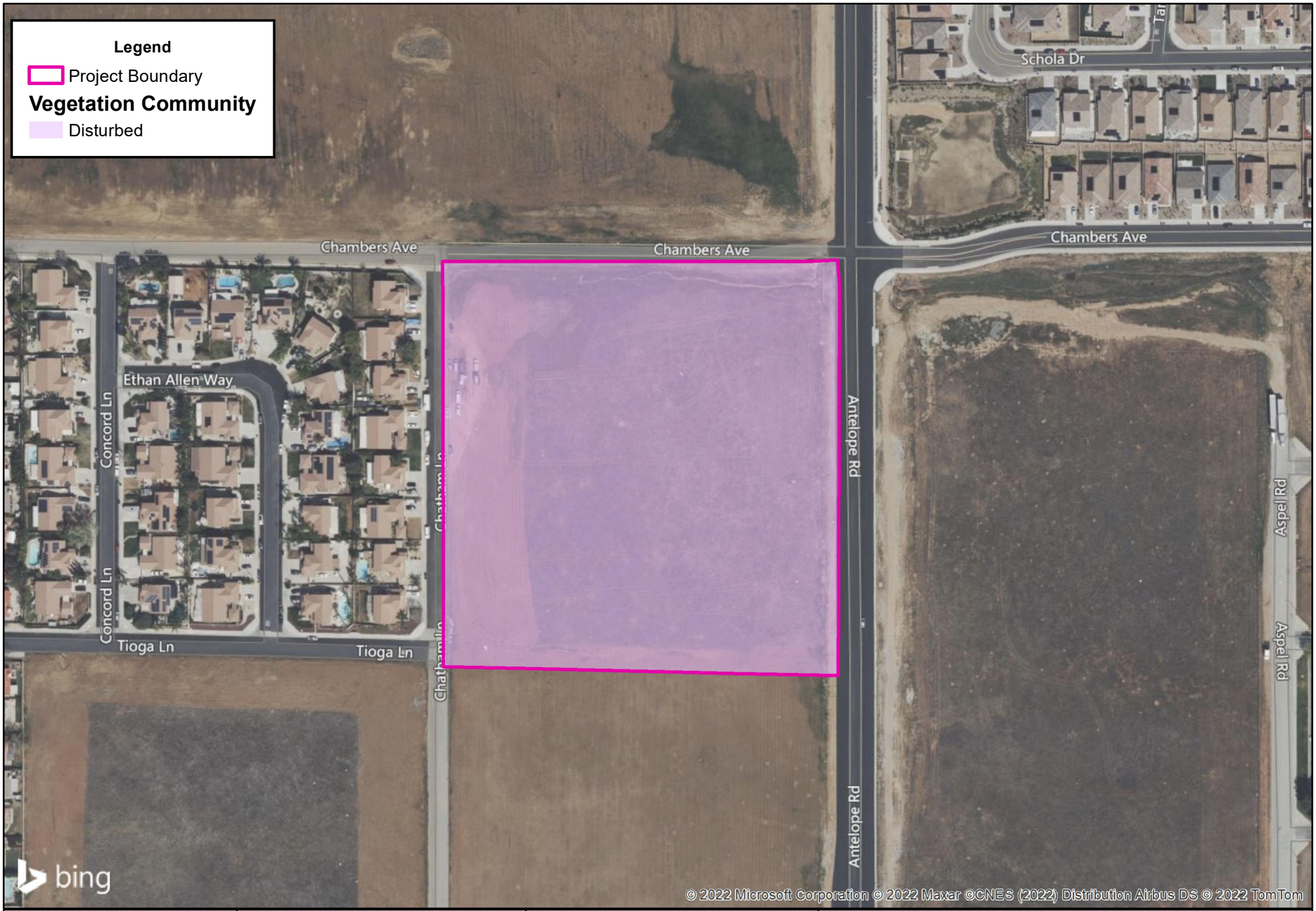
5.1.1.2 Surrounding 500-foot Buffer

While a majority of the surrounding 500-foot buffer consists of residential development to the west, active construction to the north, ruderal and disturbed lands to the east and south. No direct impacts are expected to occur to the vegetation communities within the surrounding 500-foot buffer.

5.1.2 Critical Habitat and CNDDB Occurrences

The Study Area contains no special-status vegetation type listed by the CNDDB and CDFW. No sensitive wildlife species were observed during the 2022 surveys.

The Study Area is not located within any designated critical habitat. The closest designated critical habitat is for the spreading navarretia (*Navarretia fossalis)* and it is located an approximate 3.19 miles to the north-west of the Project site. No habitat suitable for spreading navarretia occurs on the Project site.



GIS Prepared By:
Carlson SLS

Created: August 10, 2022

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Map

Cypress Sand Project

Vegetation Community

FIGURE 5

Figure 6 Photographs



Looking northeast over the Project site containing disturbed habitat.



Marginal burrows were observed, however the site lacked vegetation cover.

Figure 7 Photographs



The adjacent neighborhood utilizes the Project site for parking.



Looking south east over the Project site at the disturbed habitat.

5.1.3 General Wildlife Inventory

Observations regarding the wildlife species present were made during the field visit (Table 3). Sensitive wildlife species occurring or potentially occurring are discussed below in Section 5.5, *Sensitive Wildlife Species*.

Table 3. Wildlife Species Observed during the Field Visit

Scientific Name	Common Name
Hirundo rustica	barn swallow
Melospiza melodia	song sparrow
Sayornis saya	Say's phoebe
Zenaida macroura	mourning dove

5.1.4 Sensitive Wildlife Species

Sensitive wildlife include those species listed as Endangered or Threatened under the ESA or the CESA, candidates for listing by the USFWS or CDFW, and California Watch List, Fully Protected and Species of Special Concern to CDFW. No listed wildlife was identified or observed within the Project site during the field survey.

5.2 MSHCP Assessment

The Project site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits. Furthermore, the Project site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits, and the Project site is not located in survey areas for Amphibians, Mammals, or Special Linkage areas. The Project site is subject to Riparian and Riverine Areas pursuant to MSHCP Section 6.1.2, Narrow Endemic Plants (Survey Area 3) pursuant to MSHCP Section 6.1.3, and Western Burrowing Owl overlay pursuant to MSHCP Section 6.3.2.

5.2.1 Riparian and Riverine Areas and Vernal Pools (Section 6.1.2)

The Project site was assessed for MSHCP riparian/riverine areas and vernal pools pursuant to Section 6.1.2 of the MSHCP. The Project site contains a single feature that does not meet the definition of Section 6.1.2 riparian/riverine areas. Furthermore, there is no downstream connectivity to MSHCP-conserved areas. The onsite feature is unvegetated with no biological value and includes scattered non-native plants. No native plants occur within the feature.

Species Protected under Section 6.1.2
During vegetation mapping conducted for the Project site, no special status plants were detected during the 2022 survey. Likewise, the Project site did not contain any suitable habitat for the avian species listed in Section 6.1.2: Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools.

Vernal Pools

The Project site does not contain vernal pools or any suitable habitat for any of the riparian/riverine vernal pool species listed in Section 6.1.2 of the MSHCP, including listed fairy shrimp. Furthermore, the Project site lacks suitable soils, signs of inundation (seasonal depression, road ruts) and/or characteristic vernal pool plant species.

5.2.2 Narrow Endemic Plant – Survey Area Number 3 (Section 6.1.3)

The Project site is located within the Narrow Endemic Plant Species Survey Area (NEPSSA) Number 3 overlay, which include the following target species:

- Munz's Onion (*Allium munzii*)
  Status: California Rare Plant Rank 1B.1, federally endangered, state threatened
  Distribution: Riverside County.
  Habitat(s): Clay soils supporting chaparral, cismontane woodland, coastal scrub, pinyon-juniper woodland, and valley and foothill grassland. Known from 300 to 1,070 meters (1,000 to 3,500 feet) MSL. Blooms March through May.
  Status onsite: None. The Project site lacks suitable habitat and soils. Not observed during field visit.

- San Diego ambrosia (*Ambrosia pumila*)
  Status: California Rare Plant Rank 1B.1, federally endangered
  Distribution: Riverside and San Diego Counties.
  Habitat(s): Habitats supporting chaparral, coastal scrub, valley and foothill grasslands, and vernal pools. Observed in sandy loam or clay soils, sometimes alkaline soils. Known from 20 to 415 meters (65 to 1360 feet) MSL. Blooms April through October.
  Status onsite: None. The Project site lacks suitable habitat and soils. Not observed during field visit.

- Many-stemmed Dudleya (*Dudleya multicalulus*)
  Status: California Rare Plant Rank 1B.2
  Distribution: Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties.
  Habitat(s): Habitats supporting Chaparral, coastal scrub, and valley and foothill grassland. Often found on clay soils or granitic outcrops. Known from below 800 meters (< 2,600 feet) MSL. Blooms May through July.
  Status onsite: None. The Project site lacks suitable habitat and soils. Not observed during field visit.

- Spreading navarretia (*Navarretia fossalis*)
  Status: California Rare Plant Rank 1B.1, federally threatened
  Distribution: Los Angeles, Riverside, San Luis Obispo, and San Diego Counties.
  Habitat(s): Habitats supporting chenopod scrub, marshes and swamps, playas, and vernal pools. Known from 30 to 655 meters (100 to 2,150 feet) MSL. Blooms April through June.

Status onsite: None. The Project site lacks suitable habitat and soils. Not observed during field visit.

- California Orcutt grass (*Orcuttia californica*)
  Status: California Rare Plant Rank 1B.1, federally endangered, state endangered
  Distribution: Los Angeles, Orange, Riverside, Ventura, and San Diego Counties.
  Habitat(s): Habitats supporting vernal pools. Known from 15 to 660 meters (50 to 2,165 feet) MSL. Blooms April through August.
  Status onsite: None. The Project site lacks suitable habitat and soils. Not observed during field visit.

- Wright's trichocoronis (*Trichocoronis wrightii var. wrightii*)
  Status: California Rare Plant Rank 2B.1
  Distribution: Merced, Riverside, and Sutter Counties.
  Habitat(s): Habitats supporting meadows and seeps, marshes and swamps, riparian forest, and vernal pools supporting alkaline soils. Known from 5 to 435 meters (15 to 1,425 feet) MSL. Blooms May through September.
  Status onsite: None. The Project site lacks suitable habitat and soils. Not observed during field visit.

No special status plant species were observed during the focused August 2022 narrow endemic plant survey and, and none are expected to occur onsite due to the lack of suitable habitat or suitable soil found on the Project site.

5.2.3 Focused Burrowing Owl Survey (Section 6.3.2)

Step I Habitat Assessment survey was conducted on August 3, 2022, to determine if the Project Site contains suitable Burrowing Owl (BUOW) habitat. Based on the Habitat Assessment it was determined the Project site contains burrows however, they were not suitable size for BUOW. The survey was conducted during typical BUOW peak activity time and was not conducted during rain, high winds, or dense fog. The Project site consists of a disturbed community with several small burrows.

During the August Survey, no BUOWs or evidence of BUOWs were observed on site within the Project site or surrounding 500-feet during the Habitat Assessment. While the Project site contained burrows, they were not suitable size. The Project site does not contain vegetation cover to provide suitable nesting habitat for BUOW. Furthermore, the site contains disturbed habitat and the adjacent neighborhood park cars, boats, and RVs on the property. Much of the 500-foot buffer is developed, consisting of residential homes, active construction, or busy streets. Therefore, while the Project site contained burrows it is determined that the Project site does not contain suitable BUOW Habitat and is not occupied by BUOW due to the lack of suitable burrows, nesting habitat, and disturbed nature and routine maintenance of the site. Based on these results, Step II Part B of the MSHCP protocol is not required.

5.3 Sensitive Plant Communities

A CNDDB search within the *Romoland* USGS topographic quadrangle found no special-status vegetation community designated by CDFW.

5.4 Sensitive Plant Species

Sensitive plants include those listed, or candidates for listing, by the USFWS and CDFW; and species considered sensitive by the CNPS (particularly Lists 1A, 1B, and 2). Eight sensitive plant species were reported to occur within the USGS 7.5' Romoland quadrangle search. The potential for sensitive plant species to occur on the Project site is discussed below and as indicated in **Appendix B.**

5.4.1 Sensitive Plant Species with Potential to Occur

Due to the disturbed nature of the site, it was determined no sensitive plant species had potential to occur on-site due to the lack of suitable habitat and soil. A complete list of species and their potential to occur onsite can be found in **Appendix B**.

Munz's Onion (*Allium munzii*)
See Section 5.2.2.

Thread-leaved brodiaea (*Brodiaea filifolia*)
Status: California Rare Plant Rank 1B.1
Distribution: Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Habitats supporting chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grasslands, and vernal pools. Known from 25 to 1,120 meters (80 to 3,675 feet) MSL. Blooms March through June.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

Smooth Tarplant (*Centromadia pungens ssp. laevis)*
Status: California Rare Plant Rank 1B.1
Distribution: Los Angeles, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Habitats supporting chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grasslands. Known from 0 to 640 meters (0 to 2,100 feet) MSL. Blooms April through September.
Status onsite: Low. CNDDB records an occurrence of the species 1.98 miles to the south in 2015. However, the site consists of disturbed vegetation community with annual fuel abatement. Not observed during field visit.

Parry's Spineflower (*Chorizanthe parryi var. parryi)*
Status: California Rare Plant Rank 1B.1
Distribution: Los Angeles, Riverside, and San Bernardino Counties.

Habitat(s): Habitats supporting chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands. Known from 275 to 1,220 meters (900 to 4,005 feet) MSL. Blooms April through June.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

Long-spined Spineflower (*Chorizanthe polygonoides var. polygonoides)*
Status: California Rare Plant Rank 1B.1
Distribution: Orange, Riverside, and San Diego Counties.
Habitat(s): Habitats supporting chaparral, coastal scrub, meadows and seeps, valley and foothill grasslands, and vernal pools. Known from 30 to 1,530 meters (100 to 5,020 feet) MSL. Blooms April through June.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

Coulter's goldfields (*Lasthenia glabrata ssp. coulteri)*
Status: California Rare Plant Rank 1B.1
Distribution: Colusa, Kern, Los Angles, Merced, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Solano, Tehama, Tulare, Ventura, Yolo, and San Diego Counties.
Habitat(s): Habitats supporting marshes and swamps (coastal salt), playas, and vernal pools. Known from 1 to 1,220 meters (5 to 4,005 feet) MSL. Blooms February through June.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

Spreading navarretia (*Navarretia fossalis*)
See Section 5.2.2.

California Orcutt grass (*Orcuttia californica*)
See Section 5.2.2.

5.5 Sensitive Wildlife Species

Sensitive wildlife include those species listed as Endangered or Threatened under the ESA or CESA, candidates for listing by the USFWS or CDFW, and California Watch List, Fully Protected and Species of Special Concern to CDFW. Several sensitive wildlife species were reported in the vicinity of the Project Site based on the CNDDB and within the 9-quadrangle search. It is determined the Project site does not contain suitable habitat for any listed species. The potential for sensitive wildlife species to occur on the Project Site is discussed further in **Appendix C**.

5.5.1 Migratory Birds and Raptors

The Project Site supports potential foraging habitat for nesting birds including raptors, however, lacks the necessary habitat for nesting for raptors. The site provides minimal habitat for ground nesters and other songbirds.

5.6 Wildlife Movement

5.6.1 Overview

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat, separating different populations of a single species. Corridors effectively act as links between these populations.

The Project Site was evaluated for evidence of a wildlife movement corridor. The following resources were used to determine the potential for the site to be used as a wildlife corridor:

- information compiled from the literature review, including, aerial photographs, USGS topographic maps, and resource maps for the vicinity;
- field survey; and
- knowledge of desired topography and resource requirements.

5.6.2 Wildlife Movement Within the Project Site

The site is disturbed habitat and is therefore restricted in its potential to support regional wildlife movement. Further, the site is constrained to the north, south, and west by residential homes, active construction and a busy street which further constrains potential regional wildlife movement through the site.

Although there is no regional movement through the Project site, there is some potential for smaller or "local" movement through the site. Movement on a smaller scale could occur within the site for species that are less restricted in movement pathway requirements or are adapted to urban areas [e.g., raccoon (*Procyon lotor*), stripped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and bird species in general). Habitat within the site is disturbed habitat. As such, it may minimally support some wildlife movement within the site. The home range and average dispersal distance of many of these species may be entirely contained within the site and immediate vicinity.

Bird species may utilize the site for foraging, although this is expected to be limited due to the high level of disturbance, lack of vegetation, and routine maintenance. During seasons when routine maintenance does not take place, the site could potentially support foraging habitat for avian species on a local scale. Due to residential homes,

active construction and busy streets surrounding the site, the site provides no function to facilitate movement for wildlife species on a regional scale.

5.7 Jurisdictional Waters and Wetlands

Based on the literature review and USGS quadrangle topographic map, a single drainage feature occurs onsite. The Project site consists of undeveloped disturbed habitat with signs of off-roading activities; however, a small single drainage occurs along the northern Project site boundary. The drainage, Unnamed Drainage A, is an ephemeral drainage that is primarily unvegetated or contains scattered non-native species. The drainage flow west under Antelope road where it originates farther west from a stormdrain outlet. Associated vegetation within Unnamed Drainage A includes red-stemmed filaree (*Erodium cicutarium*), Russian thistle (*Kali tragus*), foxtail chess (*Bromus madritensis ssp. rubens*), ripgut grass (*Bromus diandrus*), and wild oat (*Avena fatua*). Vegetation associated with the drainage feature supports predominantly non-native species and does not represent suitable habitat for any special-status plants and animals. Unnamed Drainage A ranges in width from 1 to 2 feet.

Therefore, based on the field survey, a single drainage feature was identified on the Project site that meets the definition and is considered jurisdictional RWQCB and CDFW jurisdiction. Table 4 and Figure 8 outlines the acreage of the feature. No wetlands were identified based on the regulations outlined within the RWQCB protocol.

Table 4. Jurisdictional Waters

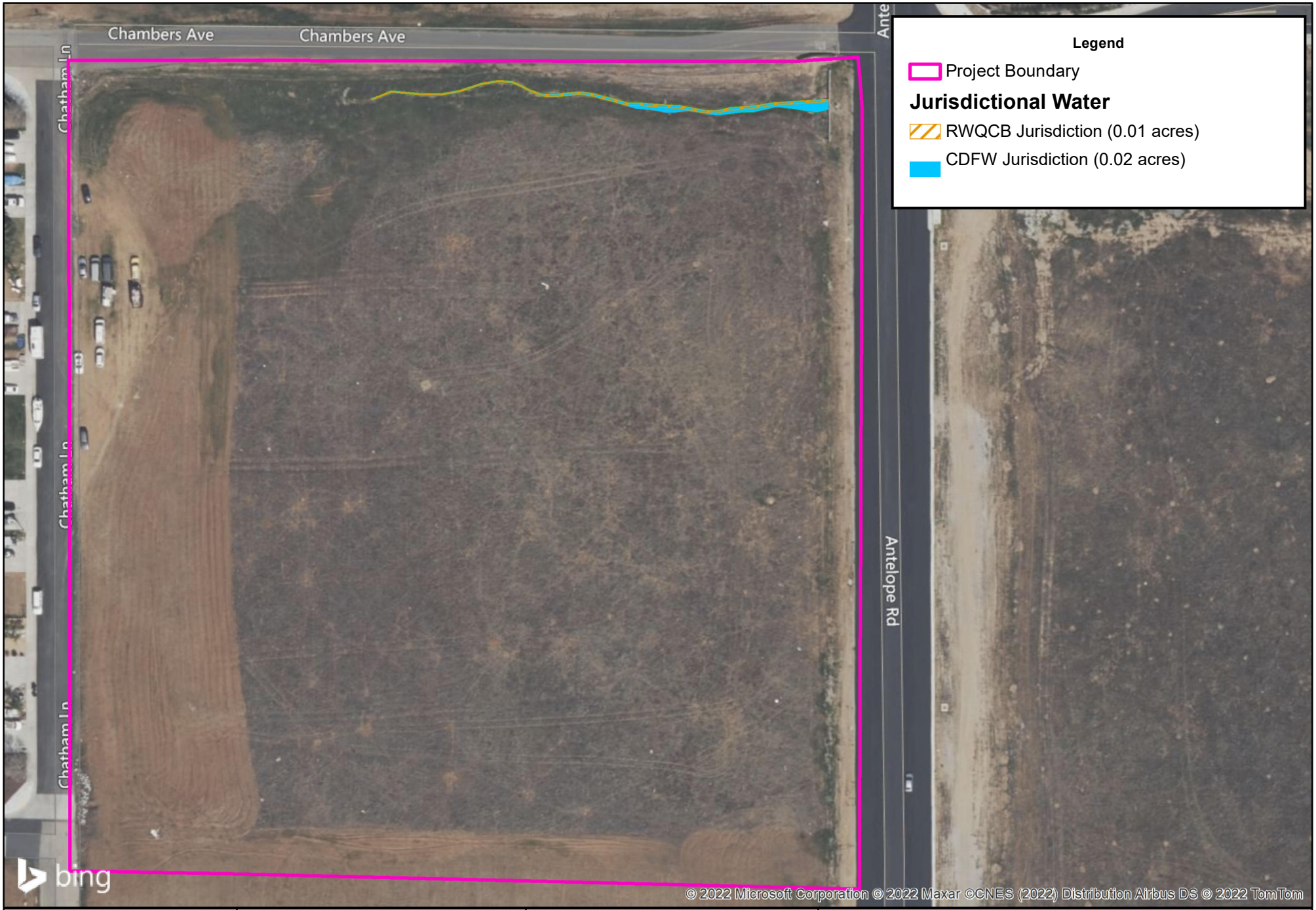
Drainage	RWQCB Jurisdiction (wetland/non-wetland)	CDFW Jurisdiction	Linear Feet
Unnamed Drainage A	0.00 ac / 0.01 ac	0.02 ac	366

5.8 Soils

The United States Department of Agriculture NRCS lists several soil types (series) for the Project site. Please see below for the following soil type, which was used to determine the possibility for sensitive wildlife and plant species. No unique soil types exist on the Project site.

The following four soil types are mapped on the Project site and shown on Figure 9:

- Garretson gravelly very fine sandy loam, 2 to 8 percent slopes (GdC)
- Placentia fine sandy loam, 0 to 5 percent slopes (PlB)
- Wyman loam, 2 to 8 percent slopes, eroded (WyC2)
- Yokohl loam, 2 to 8 percent slopes (YbC)



GIS Prepared By:
Carlson SLS

Created: August 10, 2022

0 25 50 100 150 200 Feet

1 inch = 100 feet

Data Source: Bing Map
Field Survey (08/05/2022)

Cypress Sand Project

Jurisdictional Waters Map

FIGURE 8



GIS Prepared By:
Carlson SLS

Created: August 10, 2022

0 50 100 200 300 400 Feet
1 inch = 200 feet

Data Source: Bing Map

Cypress Sand Project
Soil Map

FIGURE 9

6.0 Threshold of Significance

Appendix G of the CEQA Guidelines is used by public agencies in determining whether a project may have a significant impact on biological resources. Under Appendix G, a project may have a significant impact on biological resources if it would:

Threshold BIO-A Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Threshold BIO-B Have a substantial adverse effect on any riparian habitat or other sensitive plant community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

Threshold BIO-C Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Threshold BIO-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 areas.

Threshold BIO-E Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Threshold BIO-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.

For the purposes of this impact analysis the following definitions apply:

- "Substantial adverse effect" means loss or harm of a magnitude which, based on current scientific data and knowledge would: (1) substantially reduce population numbers of a listed, candidate, sensitive, rare, or otherwise special status species; (2) substantially reduce the distribution of a sensitive plant community/habitat type; or (3) eliminate or substantially impair the functions and values of a biological resource (e.g., streams, wetlands, or woodlands) in a geographical area defined by interrelated biological components and systems. In the case of this analysis, the prescribed geographical area is considered to be the region that includes the USGS topographic quadrangle for the site. For some species,

the geographic area may extend to the vicinity of the site based on known distributions of the species.

- "Conflict" means contradiction of a magnitude, which based on foreseeable circumstances, would preclude or prevent substantial compliance.

- "Rare" means: (1) that the species exists in such small numbers throughout all, or a significant portion of, its range that it may become endangered if its environment worsens; or (2) the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the ESA.

7.0 Significance Determination and Proposed Mitigation

7.1 Regulatory Setting

Sensitive species are provided protection by either Federal or State resource management agencies, or both, under provisions of the ESA and CESA.

There are a number of performance criteria and standard conditions that must be met as part of any review and approval of the proposed project. These include compliance with all of the terms, provisions, and requirements with applicable laws that relate to Federal, State, and local regulating agencies related to potential impacts to sensitive plant and wildlife species, wetlands, riparian habitats, and blue lined stream courses. Impacts are sometimes locally important but not significant because, although they would result in an adverse alteration of existing local conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

7.2 Project Related Impacts

For the purpose of this assessment, project-related impacts consist of direct and indirect impacts. Direct impacts are considered to be those that involve the loss, modification or disturbance of natural habitats (i.e., vegetation or plant communities), which in turn, directly affect plant and wildlife species dependent on that habitat. Direct impacts also include the destruction of individual plants or wildlife, which is typically the case in species of no to low mobility (i.e., plants, amphibians, reptiles, and small mammals). The collective loss of individuals in these manners may also directly affect regional population numbers of a species or result in the physical isolation of populations thereby reducing genetic diversity and, hence, population stability.

Indirect impacts are considered to be those that involve the effects of increases in ambient levels of sensory stimuli (e.g., noise, light), unnatural predators (e.g., domestic cats and other non-native animals), and competitors (e.g., exotic plants, non-native animals). Indirect impacts may be associated with the construction and/or operation of a project; therefore, these impacts may be both short-term and long-term in their duration. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to the Project site.

The determination of impacts in this analysis is based on the proposed project development plan and the biological values of the habitat and/or sensitivity of plant and wildlife species to be affected. Any recommended mitigation measures to address impacts are discussed below, along with compliance of existing regulations. Based on the preliminary plans, the entire site is expected to be directly impacted. No direct impacts are expected to occur to the vegetation communities located within the surrounding 500-foot buffer area.

7.3 Threshold BIO-A

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as 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 Measures Incorporated.

7.3.1 Sensitive Plant Species

Development of the Project site would result in the direct removal of non-native and ruderal plant species. No special status species or sensitive species were identified to occur onsite, nor were they observed onsite. The Project would include the removal of non-native and ruderal species; therefore, impacts would not be considered a significant impact and no mitigation is required.

7.3.2 Sensitive Wildlife Species

Development of the Project site would result in the disruption and removal of habitat and the loss and displacement of non-sensitive common wildlife species. Due to the level of existing disturbance from routine maintenance on the site and human disturbance within the vicinity (e.g., nearby development; parking onsite), these impacts would not be expected to reduce the general wildlife populations below self-sustaining levels within the region and impacts to non-sensitive wildlife species do not meet the

significance thresholds. Therefore, impacts to common wildlife species would not be considered a significant impact and no mitigation is required.

The Project site consists of disturbed habitat and lacks suitable nesting habitat for sensitive wildlife species. The Project site provides limited suitable habitat for ground nesters and some common avian species. While none of the common species carry a Federal or State listing as threatened or endangered, they are all protected under the MBTA during breeding. Therefore, a pre-construction survey is required in compliance with the MBTA. Implementation of Mitigation Measure MM BIO-1 would reduce potential impacts to the avian species to a less than significant level, if nesting individuals are present.

MM BIO-1 *Prior to the issuance of any grading permit that would impact potentially suitable nesting habitat for avian species, the project applicant shall adhere to the following:*

1. *Vegetation removal activities shall be scheduled outside the nesting season (September 1 to February 14 for songbirds; September 1 to January 14 for raptors) to the extent feasible to avoid potential impacts to nesting birds and/or ground nesters.*

2. *Any construction activities that occur during typical nesting season (February 15 to August 31 for songbirds; January 15 to August 31 for raptors) will require that all suitable habitat, on-site and within 300-feet surrounding the site (as feasible), be thoroughly surveyed for the presence of nesting birds by a qualified biologist before commencement ground disturbances. If active nests are identified, the biologist would establish no-work buffers around the active nest(s) (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers would be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The onsite biologist would review and verify compliance with these nesting boundaries and would verify the nesting effort has finished. Work can resume within these areas when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas and would develop a Nesting Bird Plan, which is to be submitted and approved by the City prior to any no-work buffer reduction to prevent impacts on any active nest (eggs, chicks, etc.).*

7.4 Threshold BIO - B

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

Less Than Significant with Mitigation Incorporated.

7.4.1 Sensitive Plant Communities

No sensitive plant community occur on the Project site. Therefore, no impacts would occur.

7.4.2 CDFW Jurisdiction

A total of 0.02 acres of a swale identified in the north-eastern portion of the Project site that may be subject to Section 1602 of the California Fish and Game Code, as regulated by CDFW. The impacts would occurs to an earthen swale that flows east under Antelope Road. The swale has minimal biological value, composed of unvegetated bare areas or non-native species. The quality of the drainage is characterized as poor due to the presence of non-native species, bare area, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse.

A total of 0.02 -acres of direct impacts to potential Waters of the State would occur due to the construction of the Project site. The quality of the drainage is characterized as poor due to the presence of dense non-native species, bare area, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse. While minor in nature and no biological value, the impacts would likely require regulatory permits with CDFW. While an approximate 0.02 acres of Waters of the State would be impacted, the impacts to Waters of the State are potentially significant. To offset the impacts to Waters of the State, Mitigation Measure BIO – 2 (MM BIO-2) requires the applicant to obtain regulatory permits and Mitigation Measure BIO – 3 (MM BIO-3) to purchase 0.02-acres of rehabilitation credits through a CDFW approved mitigation bank, such as Riverpark Mitigation Bank or in-lieu fee program with written approval from CDFW. The purchase of 0.02-acres of rehabilitation credits represents a 1:1 ratio of mitigation to impacts. Given the current limited biological value of the drainage ditch, bare or invasive earthen bottom, and lack of consistent hydrology within the drainage, the issuance of regulatory permits and purchase of 0.02-acres of rehabilitation credits outlined within MM BIO-2 and MM BIO- 3 would reduce impacts to less than significant.

MM BIO-2: *Prior to the issuance of any grading permit for permanent impacts in the areas designated as jurisdictional features, the Applicant shall consult with*

the Regulatory Agencies to determine the required Permits. Should Regulatory permits be required, they shall be obtained prior to impacts to jurisdictional features.

MM BIO-3: Prior to impacts to jurisdictional waters and to mitigate for the impacts to 0.02-acres of non-wetland drainage ditch, the Applicant shall purchase 0.02-acres of rehabilitation credits through an approved mitigation bank, such as Riverpark Mitigation Bank, or in-lieu fee program with written approval from the Resource Agencies.

A total of 0.01 acres of a swale identified on the Project site subject to Porter-Cologne Waters under California Water Code Section 13050(e), as regulated by RWQCB. The impacts would occurs to an earthen drainage ditch that flows east under Antelope Road. The drainage ditch has minimal biological value, composed mainly of bare areas and non-native species. The quality of the drainage is characterized as poor biological value due to the presence of non-native species, bare area, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse.

While an approximate 0.01 acres of Porter-Cologne Waters would be impacted, the impacts would be considered significant. To offset the impacts, MM BIO- 2 and MM BIO-3 requires the applicant to consult with the Regulatory Agencies and potentially obtain regulatory permits and to purchase 0.02-acres of rehabilitation credits through a RWQCB approved mitigation bank, such as Riverpark Mitigation Bank, or in-lieu fee program with written approval from RWQCB. The purchase of 0.02-acres of rehabilitation credits represents a 2:1 ratio of mitigation to RWQCB regulated jurisdictional impacts. Given the current limited biological value of the drainage ditch, bare or invasive earthen bottom, and lack of consistent hydrology within the drainage, the issuance of regulatory permits and purchase of 0.02-acres of rehabilitation credits outlined within MM BIO-2 and MM BIO- 3 would reduce impacts to less than significant.

With the implementation of MM BIO-2 and MM BIO-3, potential impacts to jurisdictional waters are reduced to a less than significant level.

7.5 Threshold BIO - C

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

No Impact.
No jurisdictional wetlands occur onsite. Therefore, there is no impact to wetlands and no mitigation is required.

7.6 Threshold BIO - D

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?

Less than Significant with Mitigation Incorporated.

7.6.1 Wildlife Movement

The site supports potential live-in and movement habitat for species on a local scale (i.e., some limited live-in and marginal movement habitat for reptile, bird, and mammal species), however, the site provides little to no function to facilitate wildlife movement on a regional scale. Furthermore, the site is not identified as a Special Linkage area within the MSHCP. Movement on a local scale likely occurs with species adapted to urban environments due to the surrounding development and disturbances in the vicinity of the site. Although implementation of the Project would result in disturbances to local wildlife movement within the site, those species adapted to urban areas would be expected to persist on-site following construction. As such, impacts would be less than significant, and no mitigation measures would be required.

7.6.2 Migratory Birds and Raptors

The Project site supports potential foraging habitat and limited nesting habitat (ground nesters) for migratory birds, in addition to potential foraging habitat for raptors. Based on the disturbed nature of the site, the quality of foraging habitat is considered to be low. Therefore, impacts to foraging habitat would be considered less than significant and no mitigation measures are considered required.

The site has the potential to support avian ground nests due to the lack of vegetation and limited ground cover. Nesting activity typically occurs from February 15 to August 31. Disturbing or destroying active nests is a violation of the MBTA (16 U.S.C. 703 et seq.). In addition, nests and eggs are protected under Fish and Wildlife Code Section 3503. As such, direct impacts to breeding birds (e.g. through nest removal) or indirect impacts (e.g. by noise causing abandonment of the nest) is considered a potentially significant impact. Compliance with the MBTA would reduce impacts to a less than significant level, as detailed in MM BIO-1.

7.7 Threshold BIO - E

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

No Impact.

The Project is not subject to any local policies, such as a tree preservation ordinance. Furthermore, the Project site did not contain any tree species. Therefore, no impacts would occur, and no mitigation is required.

7.8 Threshold BIO - F

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

Less than Significant.

The Project site is located within the MSHCP. The Project site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits. Furthermore, the Project site is not located in survey areas for Amphibians, Mammals, Narrow Endemic Plants Overlay, or Special Linkage areas. The Project site is subject to Riparian and Riverine Areas pursuant to MSHCP Section 6.1.2, Narrow Endemic Plants Overlay pursuant to Section 6.13, and Western Burrowing Owl overlay pursuant to MSHCP Section 6.3.2.

The Project site was assessed for MSHCP riparian/riverine areas and vernal pools pursuant to Section 6.1.2 of the MSHCP. The Project site contains a single feature that does not meet the definition of MSHCP Section 6.1.2 riparian/riverine areas. Furthermore, there is no downstream connectivity to MSHCP-conserved areas. The onsite feature is unvegetated with no biological value and includes scattered non-native plants. No native plants occur within the feature. The Project site does not contain vernal pools or any suitable habitat for any of the riparian/riverine vernal pool species listed in Section 6.1.2 of the MSHCP, including listed fairy shrimp. Furthermore, the Project site lacks suitable soils, signs of inundation (seasonal depression, road ruts) and/or characteristic vernal pool plant species. The Project is consistent with the goals and objectives within MSHCP Section 6.1.2.

Species Protected under Section 6.1.2
During vegetation mapping conducted for the Project site, no special status plants were detected during the 2022 survey. Likewise, the Project site did not contain any suitable habitat for the avian species listed in Section 6.1.2: Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools. Therefore, the Project is consistent with the goals and objectives within MSHCP Section 6.1.2.

Pursuant to Section 6.1.3 Narrow Endemic Plants, no narrow endemic plant species were observed during the 2022 survey. Historical Google earth aerials were reviewed. While the Project site does not contain suitable habitat or soils for species as outlined within ***Section*** *Error! Reference source not found.* due to disturbed vegetation and regular maintenance and disking. During the historical aerial review, regular

maintenance began in 1997 and continues to present day. Therefore, while a single narrow endemic plant survey was performed it is unlikely the targeted species for Survey Area 3 occur onsite due to the negative focused survey, regular maintenance, lack of suitable habitat, and lack of suitable soils found onsite. Furthermore, all species within Survey Area 3 are covered species under the MSHCP. Therefore, due to the negative results from the focused narrow endemic plant survey, regular maintenance since 1997, lack of suitable habitat, and lack of suitable soils, no narrow endemic plant species are anticipated to occur onsite and no impacts are anticipated. The Project is consistent with the goals and objectives within MSHCP Section 6.1.3.

Furthermore, based on the Habitat Assessment it was determined the Project site does not contain suitable habitat for BUOW. No BUOWs or evidence of BUOWs were observed on site or within the surrounding 500-feet during the habitat assessment. While the Project site contained several burrows, none were observed to be suitable sized for the species, nor did the Project contain any vegetation cover to provide suitable nesting habitat for BUOW. Furthermore, the site contains disturbed habitat and the adjacent neighborhood park cars, boats, and RVs on the property. Much of the 500-foot buffer is developed, consisting of residential homes, active construction, or busy streets. Therefore, while burrows were observed, the lack of vegetation cover, disturbed habitat, routine maintenance, parking, and surrounding built environment, it is determined that the Project site does not contain suitable BUOW Habitat and is not occupied by BUOW. Based on the lack of suitable BUOW burrows, maintenance that occurs on the Project Site, and surrounding environment, it is determined that the Project site does not contain suitable BUOW Habitat and is not occupied by BUOW and no additional surveys are required. Therefore, the Project is consistent with MSHCP Section 6.3.2.

8.0 Cumulative Impacts

Cumulative impacts are defined as the direct and indirect effects of a proposed Project which, when considered alone, would not be deemed a substantial impact, but when considered in addition to the impacts of related projects in the area, would be considered significant. "Related projects" refers to past, present, and reasonably foreseeable probable future projects, which would have similar impacts to the proposed Project. CEQA deems a cumulative impact analysis to be adequate if a list of "related projects" is included in the EIR or the proposed project is consistent with an adopted general, specific, master, or comparable programmatic plan [Section 15130(b)(1)(B)]. CEQA also states that no further cumulative impact analysis is necessary for impacts of a proposed project consistent with an adopted general, specific, master, or comparable programmatic plan [Section 15130(d)].

Indirect impacts to the surrounding buffer area must be considered in the context of the other development in the area. The Project does not anticipate to impact the surrounding buffer area.

The loss of biological resources on the Study Area must be considered in the context of the other development in the area. The Project's direct impact analysis identified a single biological resource, nesting birds, that when combined with impacts from other reasonably past, present, and future projects, could result in a cumulative biological impact. Direct impacts may occur to nesting birds, should construction activities and ground disturbances begin during the typical nesting season. However, adherence and implementation of MM BIO - 1 will ensure impacts to avian species or their habitats are minimized thus reducing the Project's contribution to cumulative impacts to less than significant.

Impacts to a single jurisdictional feature that may be under the Jurisdiction of CDFW and RWQCB may result in a significant impact. However, adherence and implementation of MM BIO–2 and MM BIO-3 will ensure impacts to the drainage ditch is minimized thus reducing the Project's contribution to cumulative impacts to less than significant. Furthermore, the purchase of the credits represents a biological superior habitat than the drainage ditch feature that occurs onsite that appears to be regularly maintained and includes unvegetated area and non-native species.

The MSHCP was specifically designed to cover a large geographical area so that it would protect numerous special-status species and sensitive habitats throughout the region. It is the projected cumulative effect of future development that has required the preparation and implementation of the MSHCP to protect multiple habitats and species. While a single narrow endemic plant survey was performed it is unlikely the targeted species for Survey Area 3 occur onsite due to the negative focused survey, regular maintenance, lack of suitable habitat, and soils found onsite. Furthermore, all species within Survey Area 3 are covered species under the MSHCP. Therefore, due to the negative results from the focused narrow endemic plant survey, regular maintenance since 1997, lack of suitable habitat, and lack of suitable soils, no narrow endemic plant species are anticipated to occurs onsite and no impacts are anticipated.

With implementation of the mitigation measures outlined above would reduce the Project's contribution to cumulative impacts to less than significant with mitigation incorporated. Furthermore, because the MSCHP provides a regional and comprehensive approach to conservation planning, the proposed Project's contribution to cumulative impacts would also be less than significant.

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Appendix A
Jurisdictional Delineation

Memorandum

Date: June 17, 2024

To: Elena Goralogia, Brian Smith and Associates

From: Brianna Bernard

Subject: Jurisdictional Delineation the Cypress Sand Menifee Project Site located in the City of Menifee

Carlson Strategic Land Solutions (CSLS) prepared this Jurisdictional Delineation for Brian Smith and Associates for the Cypress Sand Project Site (Project Site) located in the City of Menifee. The Project site is comprised of 9.71-acres. The jurisdictional assessment for the Project Site and the surrounding 300-feet, collectively known as the "Study Area," incorporates the findings from a field survey and jurisdictional delineation conducted on August 5, 2022.

1.0 Project Location

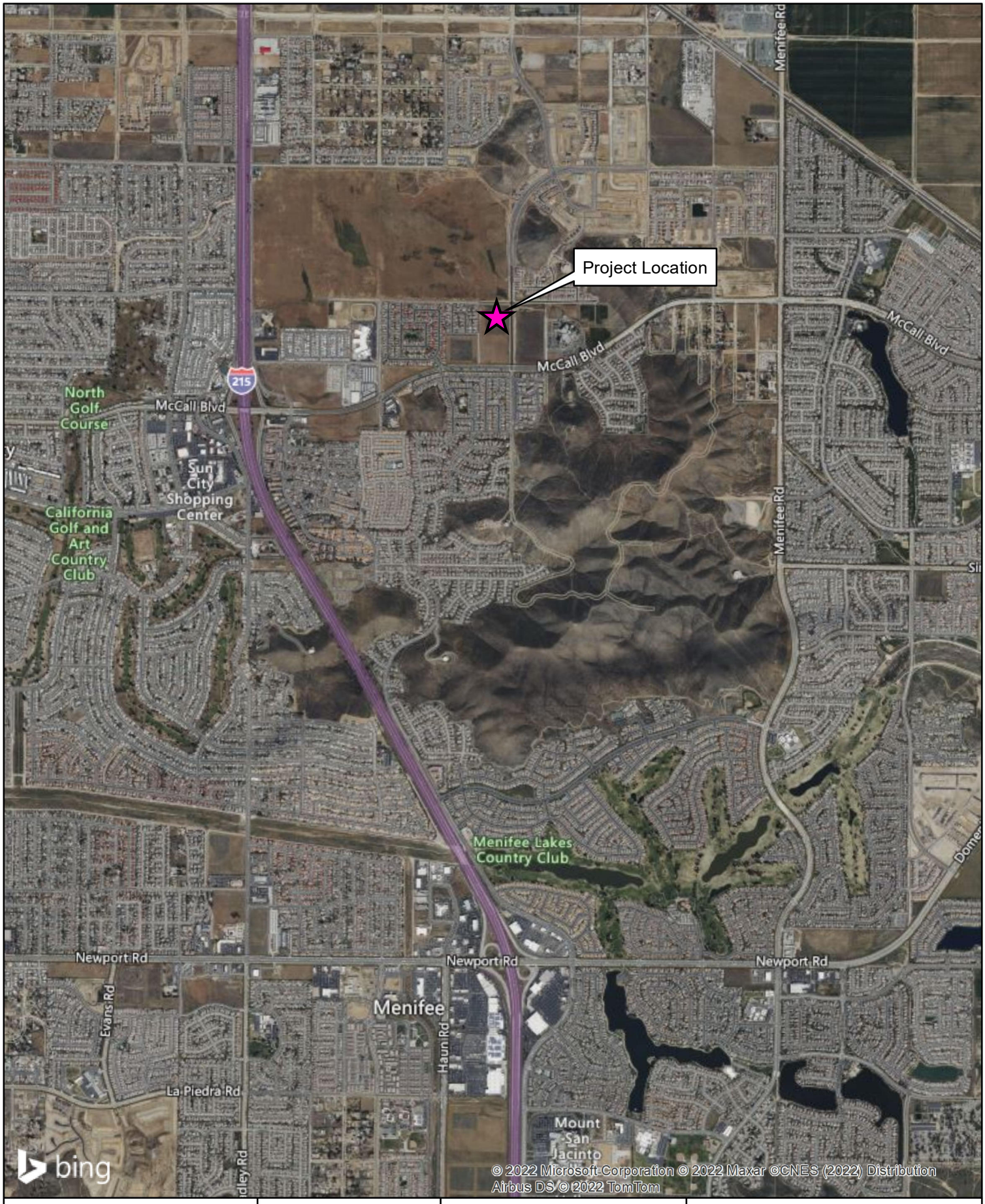
The Study Area is located in the City of Menifee, south of Chambers Avenue, west of Antelope Road, east of Chatham Lane, and north of Tioga Lane (Figures 1 and 2). Areas surrounding the Study Area include residential development to the west, construction to the north, and undeveloped land to the south and east (Figure 2). The Study Area is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Romoland* Quadrangle. The Assessor's Parcel Number is 333-050-034.

Access to the Project Site is from Antelope Road or Chambers Avenue.

2.0 Project Description and Existing Conditions

The proposed Project involves the development of a gated apartment complex including seven multi-unit buildings, totaling 135 residential units, along with associated amenities and parking. The Project includes a gross area of 9.71 acres and 7.94 net acres, including 130,400 square feet of residential development at a density of 14 dwelling units per acre. The proposed Project includes 56 one-bedroom units and 80 two-bedroom units along with 268 total parking spaces and amenities such as a 2,049 square foot clubhouse (including fitness center), lanai, mail room, pool, spa, basketball and pickleball courts, tot lot, and dog walk.

The approximately 10-acre Project site is characterized as ruderal and disturbed vegetation communities and a single drainage located within the northern Project site boundary. Immediate surrounding land uses include residential development to the west, construction to the north and undeveloped land to the south and east.



GIS Prepared By:
Carlson SLS

Created: July 29, 2022

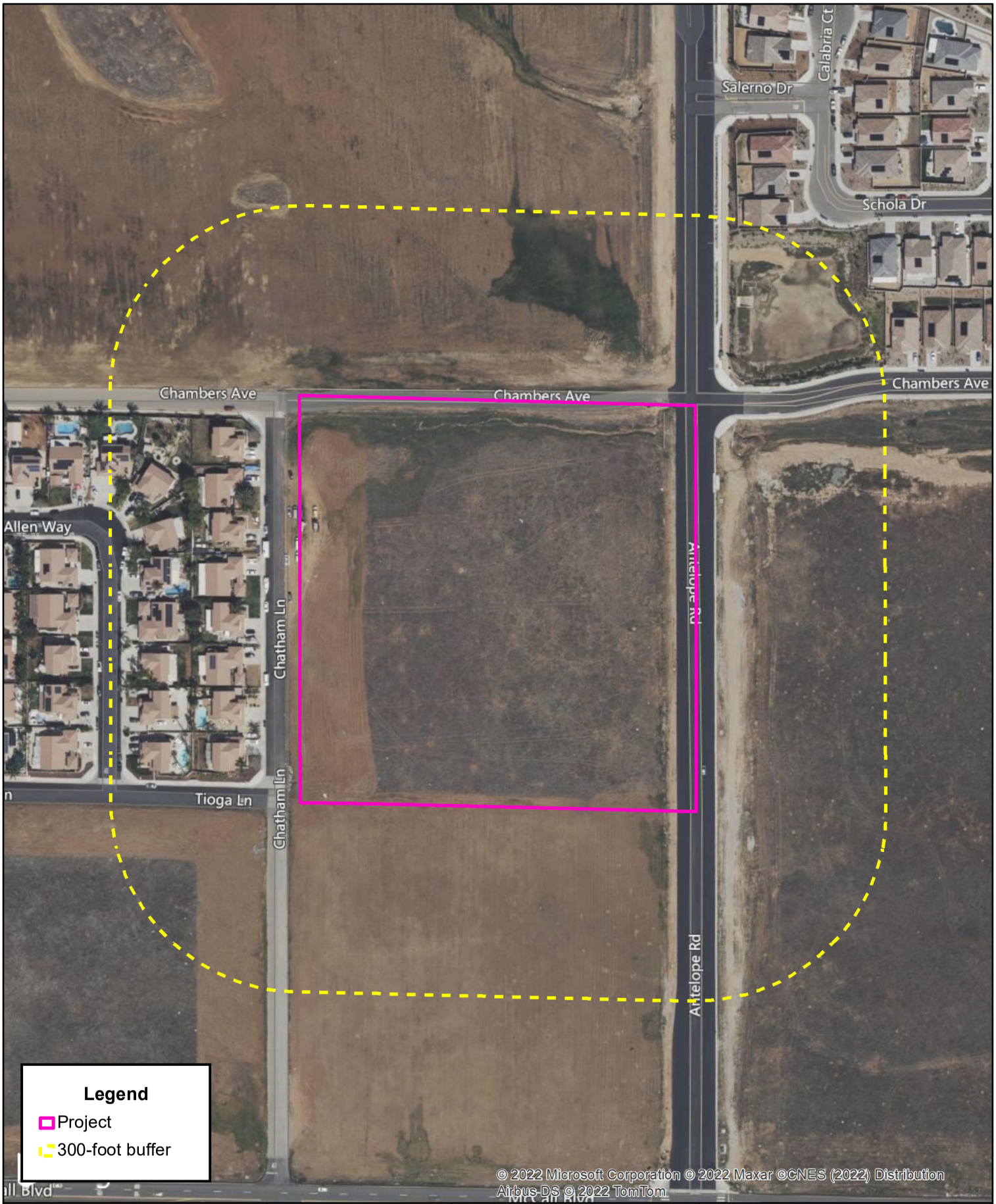
0 250 500 1,000 1,500 2,000 2,500 Feet
1 inch = 2,500 feet

Data Source: Bing Map (2021)

Cypress Sand Project

Regional Location Map

Figure 1



GIS Prepared By:
Carlson SLS

Created: July 29, 2022

0 25 50 100 150 200 Feet
1 inch = 200 feet

Data Source: Bing Map (2021)

Cypress Sand Project

Project Location Map

Figure 2

3.0 Methodology

3.1 Jurisdictional Waters

Prior to the field investigation, CSLS biologists reviewed historic aerial imagery, topographic maps, and background information for the Study Area to determine the potential for perennial, intermittent, or ephemeral drainages and associated riparian resources.

3.1.1 Federal Clean Water Act (CWA)

The Clean Water Act (CWA), Section 401 provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator to obtain a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The Regional Water Quality Control Board administers the certification program in California. Section 404 establishes a permit program administered by the United States Army Corps of Engineers (Corps) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The Corps implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the United States Environmental Protection Agency in conjunction with the Corps (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

3.1.2 Wetlands and Other Waters of the United States

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and fall under the jurisdiction of several regulatory agencies. The Corps exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as the portion that falls within the limits of the Ordinary High-Water Mark (OHWM). The OHWM is defined as the "line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

The definition of waters of the United States has undergone several iterations, including a much more streamlined definition which was published and formally adopted in April 2020. However, in August 2021, the April 2020 Navigable Waters definition was challenged in the case *Pascua Yaqui Tribe v. Environmental Protection Agency*. In light of this case and subsequent order from US District Court for the District of Arizona, the U.S. Environmental Protection Agency (EPA) and Corps have halted implementation of the Navigable Waters Protection Rule from 2020 and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime. Then

in March 2023 following a Supreme Court decision, the rule was once again changed and finalized to codify the pre-2015 definition with some revisions to the definition wetlands. On August 29, 2023 the EPA and Corps issued a final rule to amend the prior definition of Waters of the United States. The final rule conforms with the definition of Waters of the United States to the US Supreme Court's May 25, 2023 decision in the case *Sackett v. Environmental Protection Agency*. As a result of the case, key aspects of the regulatory text have been amended to conform to the Court's decision, which revised the definitions of Waters of the United States and became effective on September 8, 2023.

The September 2023 ruling codified the term (a) waters of the United States to mean:

1. Waters which are:
   i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
   ii. The territorial seas; or
   iii. Interstate waters;
2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
3. Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
   i. Waters identified in paragraph (a)(1) of this section; or
   ii. Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
   iii. Waters identified in paragraph (a)(2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section;
5. Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.
6. Intrastate lakes and ponds, streams, or wetlands not identified in paragraphs (a)(1) through (4) of this section:
   i. That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3)(i) of this section; or
   ii. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by Corps as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[a]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present and, as outlined within the September 2023 ruling, have adjacency with relative permanent, standing or continuously flowing bodies of water with continuous connection to Waters of the US. Wetlands must meet the parameters as outlined above classified as a wetland by Corps.

It is important to note that the RWQCB definition of wetland was redefined, and the new definition went into effect May 28, 2020. The definition of a wetland is as follows: An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes, or the area lacks vegetation. This RWQCB modified three-parameter definition is similar to the federal definition in that it identifies three wetland characteristics that determine the presence of a wetland: wetland hydrology, hydric soils, and hydrophytic vegetation. Unlike the federal definition, however, the RWQCB wetland definition allows for the presence of hydric substrates as a criterion for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5% cover) to be considered a wetland.

Examples of waters that would be considered wetlands by the RWQCB definition, but not by the federal wetland definition, are non-vegetated wetlands, or wetlands characterized by exposed bare substrates like mudflats and playas, as long as they meet the three-parameters as described in the RWQCB definition. It is important to note that while the Corps may not designate a feature as a wetland, that feature could be considered a special aquatic site or other water of the U.S. by the Corps and potentially subject to Corps' jurisdiction.

The pre-2015 definition of Navigable Waters includes (1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) All interstate waters including interstate wetlands; (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (4) All impoundments of waters otherwise defined as waters of the United States under this definition; (5) Tributaries of waters identified in paragraphs (s)(1) through (4) of this section; (6) The territorial sea; and (7) Wetlands adjacent

to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section.

It is important to note that the RWQCB definition of wetland was re-defined and the new definition went into effect May 28, 2020. The definition of a wetland is as follows: An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. This RWQCB modified three-parameter definition is similar to the federal definition in that it identifies three wetland characteristics that determine the presence of a wetland: wetland hydrology, hydric soils, and hydrophytic vegetation. Unlike the federal definition, however, the RWQCB wetland definition allows for the presence of hydric substrates as a criterion for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5% cover) to be considered a wetland.

However, if any vegetation is present, then the Corps delineation procedures would apply to the vegetated component (i.e., hydrophytes must dominate). Examples of waters that would be considered wetlands by the RWQCB definition, but not by the federal wetland definition, are non-vegetated wetlands, or wetlands characterized by exposed bare substrates like mudflats and playas, as long as they meet the three-parameters as described in the RWQCB definition. It is important to note that while the Corps may not designate a feature as a wetland, that feature could be considered a special aquatic site or other water of the U.S. by the Corps and potentially subject to Corps' jurisdiction.

3.1.3 Porter-Cologne Water Quality Act – California Code, Division 7

The RWQCB also has jurisdiction over waters deemed "isolated" or not subject to Section 404 jurisdiction under the *Solid Waste Agency of Northern Cook County v. Corps* decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required to obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

Under Section 401 of the CWA, the local RWQCB must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. Compensatory mitigation for impacts to wetlands and/or waters of the state is required.

3.1.4 California Fish and Game Code Section 1600-1616

Waters of the State are regulated by the California Department of Fish and Wildlife (CDFW) through Section 1600 et seq. of the California Fish and Game Code. Section 1600 et seq. requires notifying the CDFW prior to any project activity that might (1) substantially divert or

obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If, after this notification, the CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will need to be obtained. CDFW may then place conditions in the Section 1602 Streambed Alteration Agreement to avoid, minimize, and mitigate any potentially significant adverse impacts within CDFW jurisdictional limits.

The limits of Waters of the State are defined as the "body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." Therefore, the limits extend from the channel bed to the top of the bank, with the addition of the canopy of any riparian habitat associated with the watercourse.

4.0 Results

4.1 Jurisdictional Waters

Prior to the site visit, a thorough review of historic aerials was performed to help determine the presence of historical or current jurisdictional features. Further, the National Wetlands Inventory map was reviewed, along with USGS 7.5-minute topo map to determine the potential presence or absence of jurisdictional streams/drainages, wetlands, and their location within any watersheds associated with the site, and other features that might contribute to federal authority located within watersheds associated with the Project Site. Lastly, a field survey was performed on August 5, 2022 by CSLS Biologists, Brianna Bernard and Justinne Manahan.

The Project site consists of undeveloped disturbed habitat with signs of off-roading activities; however, a small single drainage occurs along the northern Project site boundary. The drainage, Unnamed Drainage A, is an ephemeral drainage that is primarily unvegetated or contains scattered non-native species. The drainage flow west under Antelope road where it originates from a stormdrain outlet. Associated vegetation within Unnamed Drainage A includes red-stemmed filaree (*Erodium cicutarium*), Russian thistle (*Kali tragus*), foxtail chess (*Bromus madritensis ssp. rubens*), ripgut grass (*Bromus diandrus*), and wild oat (*Avena fatua*). Vegetation associated with the jurisdictional feature supports predominantly non-native species and does not represent suitable habitat for any special-status plants and animals. Unnamed Drainage A ranges in width from 1 to 2 feet.

4.2 Waters of the United States

This section relies on the term "Waters of the United States" as it applies to the jurisdictional limits under the authority of the Army Corps of Engineers definition as outlined in Section 3.1 above, both literature/data base review and a field delineation were conducted to determine the presence of waters of the US. Per the September 2023 definition and field conditions, no

Waters of the US occurs onsite. The jurisdictional feature does meet the definition of Porter-Cologne waters under the jurisdiction of RWQCB. Table 1 provides the acreage of RWQCB jurisdictional found onsite.

Table 1. Jurisdictional Waters – RWQCB

Drainage	RWQCB Jurisdiction (wetland/non-wetland)	Linear Feet
Unnamed Drainage A	0.00 ac / 0.01 ac	366

4.2.1 Wetlands

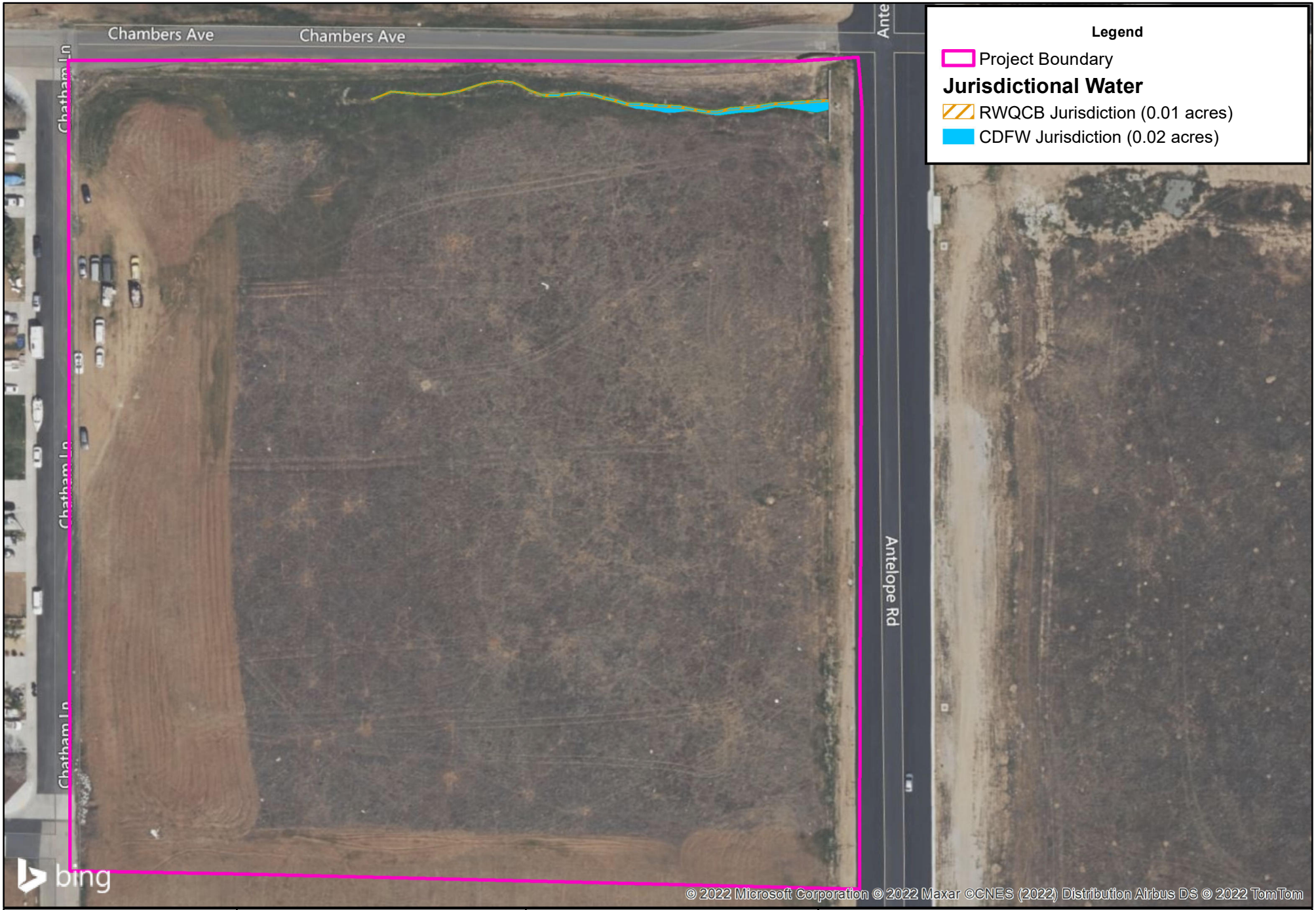
No wetlands were identified based on the regulations outlined within the Corps and RWQCB protocol.

4.3 Waters of the State

Based on the methodology described in Section 3.1, both literature/data base review and a field delineation were conducted to determine the presence of Waters of the State. The Unnamed Drainage A meets the definition of Waters of the State. The total inventory of Waters of the State is presented in Table 2 and shown on Figure 3.

Table 2. Jurisdictional Waters of the State – CDFW

Drainage	CDFW Jurisdiction
Unnamed Drainage A	0.02 ac



GIS Prepared By:
Carlson SLS

Created: August 10, 2022

0 25 50 100 150 200 Feet
1 inch = 100 feet

Data Source: Bing Map
Field Survey (08/05/2022)

Cypress Sand Project
Jurisdictional Waters

FIGURE 3

5.0 Impacts

5.1.1 Permanent Impacts

It is anticipated that the entirety of the Project site will be impacted therefore all of Unnamed Drainage is anticipated to be impacted. The approximately 0.01 acres of RWQCB Jurisdictional Waters and 0.02 acres of CDFW Jurisdictional Waters impacts occur to non-vegetated streambed and non-native species. No wetlands occur onsite therefore no impacts will occur.

5.1.2 Mitigation

As discussed above, no wetlands occur on the Project site. Furthermore, the impacted jurisdictional waters occur within Unnamed Drainage A, which consists of no vegetation or scattered invasive species. While the impacts to jurisdictional features are minor in nature, impacts to the jurisdictional feature may require Regulatory Permits. Consultation with the Resource Agencies shall occur to determine if permits would be required. Should the Regulatory Agencies take jurisdiction over the ditch, regulatory permits would be required. Furthermore, impacts to the single feature would be mitigated at a minimum of 1:1 ratio to the highest jurisdictional impacts (CDFW jurisdiction) as outlined within Mitigation Measure BIO-1 and Mitigation Measure BIO-2 due to the low to no biological value of the drainage. The highest jurisdictional impacts occur to CDFW for a total of 0.02 acres, therefore a total of 0.02 acres of rehabilitation credits would be purchased through a CDFW approved mitigation bank, such as Riverpark Mitigation Bank or in-lieu fee program with written approval from CDFW/RWQCB, referred to as the Regulatory Agencies. With the purchase of the mitigation credits any potential impacts would be mitigated to a less than significant level.

> *Mitigation Measure BIO-1: Prior to the issuance of any grading permit for permanent impacts in the areas designated as jurisdictional features, the Applicant shall consult with the Regulatory Agencies to determine the required Permits. Should Regulatory permits be required, they shall be obtained prior to impacts to jurisdictional features.*
>
> *Mitigation Measure BIO-2: Permanent impacts to 0.02-acres of jurisdictional features will be mitigated at a 1:1 ratio through the purchase of 0.02 acres of rehabilitation credits at a CDFW approved mitigation bank, such as Riverpark Mitigation Bank or in-lieu fee program with written approval from CDFW/RWQCB.*

6.0 Summary

The Project site contains jurisdictional waters. The proposed implementation of the Project results in the following impacts to non-wetland jurisdictional features:

- No Corps Jurisdiction occurs onsite
- 0.01 acres of Permanent Impacts of RWQCB Jurisdiction
- 0.02 acres of Permanent Impacts of CDFW Jurisdiction

The permanent impacted jurisdictional waters to unvegetated streambed, which consists of no vegetation, invasive species or scattered native species, and are not considered significant due

to the lack of biological habitat and routine maintenance and is required to purchase rehabilitation credits from a CDFW approved mitigation bank, such as Riverpark Mitigation Bank or in-lieu fee program with written approval from CDFW. Mitigation Measure BIO-1 and Mitigation Measure BIO-2 includes consultation with the Regulatory Agencies, potentially obtaining regulatory permits and the purchase of rehabilitation mitigation credits. With the adherence to Mitigation Measure BIO-1 through Mitigation Measure BIO-2 potential impacts to jurisdictional would be mitigated to less than significant level.

Please contact me at bbernard@carlsonsls.com or 949.542.7042, should you have any questions or comments.

Brianna Bernard
Project Manager

Enclosures:

- Figures:
  - Figure 1: Regional Location
  - Figure 2: Project Location Map
  - Figure 3: Jurisdictional Waters

- Attachment A: Representative Photographs

Attachment A

Representative Photographs



Looking east at Unnamed Drainage A.



A majority of Unnamed Drainage A is unvegetated with non-native species.



Unnamed Drainage A flowing under Antelope through a culvert.



Looking north east at Unnamed Drainage A.

APPENDIX B

Special Status Plant Species Potential Occurrence Determination

APPENDIX B

Special Status Plant Species Potential Occurrence Determination

This table summarizes conclusions from analysis and field surveys regarding the potential occurrence of special status plant species within the Project site for the USGS 7.5-Minute Topographic Map Romoland and the surrounding two-mile radius. During the field surveys, the potential for special status plant species to occur within the Project site was assessed based on the following criteria:

- Present: observed on the site during the field surveys, or recorded on-site by other qualified biologists.

- Known to Occur: observed on site in the recent past, but not observed during the most recent biological survey.

- High potential to occur: observed in similar habitat in the region by a qualified biologist or habitat on the site is a type often utilized by the species, and the site is within the known distribution and elevation range of the species.

- Moderate potential to occur: reported sightings in surrounding region, or the site is within the known distribution and elevation range of the species, and habitat on the site is a type occasionally used by the species.

- Low potential to occur: the site is within the known distribution and elevation range of the species, but habitat on the site is rarely used by the species or for which there are no known recorded occurrences of the species within or adjacent to the site.

- None: a focused study failed to detect the species or no suitable habitat is present.

- Unknown: the species' distributional/elevation range and habitat are poorly known.

Even with field surveys, biologists assessed the probability of occurrence rather than make a definitive conclusion about species presence or absence. Failure to detect the presence of the species is not definitive and may be due to variable effects associated with fire, rainfall patterns, and/or season.

Special Status Plants: Potential to Occur within the Study Area

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
Abronia vilosa var. aurita	Chaparral sand-verbena	CRPR: 1.B1 MSHCP: Not Covered	Habitats supporting sandy chaparral, coastal scrub and Desert dunes. Known from 75 to 1,600 meters (245 to 5,300 feet) MSL. Bloom Period: January through September.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Allium munzii	Munz's onion	CRPR: 1.B1 MSHCP: Covered	Clay soils supporting chaparral, cismontane woodland, coastal scrub, pinyon-juniper woodland, and valley and foothill grassland. Known from 300 to 1,070 meters (1,000 to 3,500 feet) MSL. Bloom Period: March through May.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Ambrosia pumila	San Diego ambrosia	CRPR: 1B.1, FE MSHCP: Covered	Habitats supporting chaparral, coastal scrub, valley and foothill grasslands, and vernal pools. Observed in sandy loam or clay soils, sometimes alkaline soils. Known from 20 to 415 meters (65 to 1360 feet) MSL. Blooms April through October.	None. The Project site lacks suitable habitat and soils. Not observed during field visit.
Arenaria paludicola	marsh sandwort	FE, SE CRPR:1.B1 MSHCP: Not Covered	Habitats supporting sandy openings and marshes and swamps (freshwater or brackish). Known from 3 to 170 meters (9 to 558 feet) MSL. Bloom Period: May through August.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Atriplex coronata var. notatior	San Jacinto Valley crownscale	FE CRPR: 1.B1 MSHCP: Covered	Habitats include playas, valley and foothill grassland (mesic) and vernal pools. Known from 139 to 500 meters (455 to 1,640 feet) MSL. Bloom Period: April through August.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Atriplex parishii	Parish's brittlescale	CRPR: 1.B1 MSHCP: Covered	Habitats supporting chenopod scrub, playas and vernal pools with alkaline soils. Known from 25 to 1900 meters (80 to 6,235 feet) MSL. Bloom Period: June through October.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Atriplex serenana var davidsonii	Davidson's saltscale	CRPR: 1.B2 MSHCP: Covered	Habitats supporting coastal bluff scrub and coastal scrub. Known from 10 to 200 meters (35 to 655 feet) MSL. Bloom Period: April through October.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Berberis nevinii	Nevin's	FE, SE	Occurs in chaparral, cismontane woodland,	None. No suitable habitat is found within the

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
	barberry	CRPR: 1.B1 MSHCP: Covered	coastal scrub, and riparian scrub with gravelly substrates from 275 to 825 meters (900 to 2,700 feet) MSL. Known to occur in Los Angeles, San Bernardino, Riverside, and San Diego Counties. Blooming Period: March through June.	Study Area. Not observed during field survey.
Brodiaea filifolia	Thread-leaved brodiaea	FT, SE CRPR: 1.B1 MSHCP: Covered	Habitats supporting chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools. Known from 25 to 1,120 meters (80 to 3,675 feet) MSL. Bloom Period: March through June.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Calochortus plummerae	Plummer's mariposa lily	CRPR:4.2 MSHCP: Covered	Perennial bulbiferous herb found in granitic or rocky areas. Habitat include chaparral, cismontane woodland, coastal sage scrub, lower montane coniferous forest, and valley and foothill grasslands. Known from 100 to 1,700 meters (330 to 5,500 feet) MSL. Blooming Period: May through July.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Caulanthus simulans	Payson's Jewelflower	CRPR:4.2 MSHCP: Covered	Habitats supporting chaparral and coastal scrub. Known from 90 to 2,200 meters (295 to 7,220 feet) MSL. Bloom Period: March through May.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Centromadia pungens ssp. laevis	smooth tarplant	CRPR:1B.1 MSHCP: Covered	Alkaline areas in chenopod scrub, meadows and seeps, ditches, playas, riparian woodland, and valley and foothill grassland. Known from below 480 meters (1,600 feet) MSL. Blooming Period: April through September.	Low potential. Suitable habitat is found on-site and recorded CNDDB occurrence. This is a MSHCP covered species. Not observed during field survey.
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	FE, SE CRPR: 1.B2 MSHCP: Not Covered	Habitats supporting coastal dunes and marshes and swamps (coastal salt). Known from 0 to 30 meters (0 to 985 feet) MSL. Blooming Period: May through November.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Chorizanthe leptotheca	Peninsular spineflower	CRPR:4.2	Habitats supporting chaparral, lower montane coniferous forest, and coastal scrub. Known from 300 to 1,900 meters (985 to 6,235 feet) MSL.	None. No suitable habitat is found within the Study Area. Not observed during field survey.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
		MSHCP: Covered	Bloom Period: May through August.	
Chorizanthe parryi var. parryi	Parry's spineflower	CRPR:1B.1 MSHCP: Covered	Found in sandy or rocky openings. Habitat includes chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands. Known from 275 to 1,220 meters (900 to 4,000 feet) MSL. Blooming period: April through June.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Chorizanthe polygonoides var. longispina	Long-spined spineflower	CRPR: 1.B2 MSHCP: Covered	Habitats supporting chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools. Known from 30 to 1,530 meters (100 to 5,020 feet) MSL. Bloom Period: April through July.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Convolvulus simulans	small-flowered morning-glory	CRPR: 4.2 MSHCP: Covered	Habitats supporting chaparral (openings), coastal scrub, and valley and foothill grassland. Known from 30 to 740 meters (100 to 2,430 feet) MSL. Bloom Period: March through July.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Cylindropuntia californica var. californica	snake cholla	CRPR:1B.1 MSHCP: Not Covered	Habitat includes chaparral, and coastal scrub. Known from 30 to 150 meters (98 to 492 feet) MSL. Blooming Period: April through May.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Deinandra paniculata	paniculate tarplant	CRPR: 4.2 MSHCP: Not covered	Coastal scrub and valley and foothill grassland/usually vernally mesic. Known from 25 to 9540 meters (80 to 3,085 feet) MSL. Blooming period: April through November.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Harpagonella palmeri	Palmer's grapplinghook	CRPR: 4.2 MSHCP: Not Covered	Habitats supporting chaparral, valley and foothill grasslands, and coastal scrub. Known from 20 to 955 meters (65 to 3,135 feet) MSL. Bloom Period: March through May.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	CRPR: 1.B1 MSHCP: Covered	Habitats supporting marshes and swamps, playas, and vernal pools. Known from 1 to 1,220 meters (5 to 4,005 feet) MSL. Bloom Period: February through June.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	CRPR: 4.3	Habitats include chaparral and coastal scrub. Known from 1 to 885 meters (3 to 2,900 feet)	None. The site lacks suitable habitats. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
		MSHCP: Not Covered	MSL. Blooming Period: January through July.	
Myosurus minimus ssp. apus	little mousetail	CRPR: 3.1 MSHCP: Covered	Habitats include valley and foothills grasslands and vernal pools (alkaline). Known from 20 to 640 meters (65 to 2,100 feet) MSL. Blooming Period: January through July.	None. The site lacks suitable habitats. Not observed during field surveys.
Navarretia fossalis	Spreading navarretia	CRPR: 1.B1 MSHCP: Covered	Habitats supporting chenopod scrub, marshes and swamps, playas, and vernal pools. Known from 30 to 655 meters (100 to 2,150 feet) MSL. Bloom Period: April through June.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Orcuttia californica	California Orcutt grass	CRPR: 1.B1, FE, SE MSHCP: Covered	Habitats supporting vernal pools. Known from 15 to 660 meters (50 to 2,165 feet) MSL. Bloom Period: April through August.	None. No suitable habitat is found within the Study Area. Not observed during field survey.
Romneya coulteri	Coulter's matilija poppy	CRPR :4.2 MSHCP: Covered	Native to southern California and Baja California, it grows in dry canyons in chaparral and coastal sage scrub plant communities, sometimes in areas recently burned. It is a popular ornamental plant, kept for its large, showy flowers. Blooming period: March through July	None. The site lacks suitable habitats. Not observed during field surveys.
Senecio aphanactis	Chaparral ragwort	CRPR: 2B.2 MSHCP: Not Covered	Sometimes alkaline soils supporting chaparral, cismontane woodland and coastal scrub. Known from 15 to 800 meters (50 to 2,600 feet) MSL. Blooming Period: January through April (May).	None. The site lacks suitable habitats and soils. Not observed during field surveys.
Trichocoronis wrightii var. wrightii	Wright's trichocoronis	CRPR: 2B.1 MSHCP: Covered	Habitats supporting meadows and seeps, marshes and swamps, riparian forest, and vernal pools supporting alkaline soils. Known from 5 to 435 meters (15 to 1,425 feet) MSL. Blooms May through September.	None. The site lacks suitable habitats and soils. Not observed during field surveys.

Legend
<u>*Federal Endangered Species Act (ESA) Listing Codes:*</u> federal listing is pursuant to the Federal Endangered Species Act of 1973, as amended (ESA). FE = federally listed as endangered: any species, subspecies, or variety of plant or animal that is in danger of extinction throughout all or a significant portion of their range. FT = federally listed as threatened: any species, subspecies, or variety of plant or animal that is considered likely to become endangered throughout all or a

significant portion of its range within the foreseeable future.

California Endangered Species Act (CESA) Listing Codes: state listing is pursuant to § 1904 (Native Plant Protection Act of 1977) and §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code, relating to listing of Endangered, Threatened and Rare species of plants and animals.
SE = state listed as endangered: any species, subspecies, or variety of plant or animal that are in serious danger of becoming extinct throughout all, or a significant portion, of their range.
ST = state listed as threatened: any species, subspecies, or variety of plant or animal that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future.

California Rare Plant Ranks (Formerly known as CRPR Lists): the CRPR is a statewide, non-profit organization that maintains, with CDFG, an Inventory of Rare and Endangered Plants of California. In the spring of 2011, CRPR and CDFG officially changed the name "CRPR List" or "CRPR Ranks" to "California Rare Plant Rank" (or CPRP). This was done to reduce confusion over the fact that CRPR and CDFG jointly manage the Rare Plant Status Review Groups and the rank assignments are the product of a collaborative effort and not solely a CRPR assignment.

> CRPR: 1B - California Rare Plant Rank 1B (formerly List 1B): Plants Rare, Threatened, or Endangered in California and Elsewhere. All of the plants constituting California Rare Plant Rank 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
>
> CRPR: 2 - California Rare Plant Rank 2 (formerly List 2): Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere. All of the plants constituting California Rare Plant Rank 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
>
> CRPR: 4 - California Rare Plant Rank 4 (formerly List 4): Plants of Limited Distribution - A Watch List. Very few of the plants constituting California Rare Plant Rank 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and CRPR and CDFG strongly recommend that California Rare Plant Rank 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

California Native Plant Society (CRPR) Threat Ranks: The CRPR Threat Rank is an extension added onto the California Rare Plant Rank (CRPR) and designates the level of endangerment by a 1 to 3 ranking with 1 being the most endangered and 3 being the least endangered. A Threat Rank is present for all California Rare Plant Rank 1B's, 2's, 4's, and the majority of California Rare Plant Rank 3's. California Rare Plant Rank 4 plants are seldom assigned a Threat Rank of 0.1, as they generally have large enough populations to not have significant threats to their continued existence in California; however, certain conditions exist to make the plant a species of concern and hence be assigned a California Rare Plant Rank. In addition, all California Rare Plant Rank 1A (presumed extinct in California), and some California Rare Plant Rank 3 (need more information) plants, which lack threat information, do not have a Threat Rank extension.

> 0.1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
> 0.2 = fairly endangered in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Sources:

- Calflora website - search for plants (Calflora 2022).
- CRPR Inventory of Rare and Endangered Plants (CRPR 2022).
- The Status of Rare, Threatened, and Endangered Plants and Animals of California, 2000–2004 (CDFW 2022).
- The Jepson Manual: *Vascular Plants of California,* second edition (Baldwin *et al.* 2012).
- RareFind, CDFW, California Natural Diversity Database (CNDDB) (CDFW 2022f).
- State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2022i).

APPENDIX C

Special Status Wildlife Potential Occurrence Determination

APPENDIX C

Special Status Wildlife Potential Occurrence Determination

This table summarizes conclusions from analysis and field surveys regarding the potential occurrence of special status wildlife species within the Project site for the Ramona USGS Quadrangle Map Riverside East and the surrounding two-mile radius. During the field surveys, the potential for special status wildlife species to occur within the Project Site was assessed based on the following criteria:

- Present: observed on the site during the field surveys, or previously recorded on-site by other qualified biologists.

- Known to Occur: observed on site in the recent past, but not observed during the most recent biological survey.

- High potential to occur: observed in similar habitat in the region by a qualified biologist or habitat on the site is a type often utilized by the species, and the site is within the known distribution and elevation range of the species.

- Moderate potential to occur: reported sightings in surrounding region, or the site is within the known distribution and elevation range of the species, and habitat on the site is a type occasionally used by the species.

- Low potential to occur: the site is within the known distribution and elevation range of the species, but habitat on the site is rarely used by the species or for which there are no known recorded occurrences of the species within or adjacent to the site.

- None: a focused study failed to detect the species or no suitable habitat is present.

- Unknown: the species' distributional/elevation range and habitat are poorly known.

Even with field surveys, biologists assessed probability of occurrence rather than make definitive conclusions about species presence or absence. Failure to detect the species is not definitive and may be due to variable effects associated with migration, weather, fire, and/or time of day and year.

Special Status Wildlife: Potential to Occur within the Study Area

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
Agelaius tricolor	Tricolor blackbird	ST, SSC, BLMS, BBC MSHCP: Covered	Tricolor blackbird colonies require nearby water, a suitable nesting substrate, and open-range foraging habitat composed of grassland, woodland, or agricultural cropland.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Anniella stebbinsi	Southern California legless lizard	SSC MSHCP: Not Covered	Coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Arizona elegans occidentalis	California glossy snake	SSC MSHCP: Not Covered	This species is found in a variety of habitats, primarily arid scrub areas with sparse vegetation including chaparral and grasslands areas.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Aquila chrysaetos	*Golden eagle*	FP MSHCP: Covered	Golden eagles can be found from the tundra, through grasslands, intermittent forested habitat and woodland-brushlands, and south to arid deserts and canyonlands. They're typically found in open country in the vicinity of hills, cliffs and bluffs. Golden eagles are known to be sensitive to human activity and are known to avoid developed areas.	None. No suitable habitat is found within the Project site. Not observed during the field surveys.
Aspidoscelis hyperythra	orange-throated whiptail	SSC, FSS MSHCP: Covered	The species is generally found in semi-arid brushy areas typically with loose soil and rocks, including washes, stream sides, rocky hillsides, and coastal chaparral. Habitat types include low elevation chaparral, non-native grassland, (Riversidian) coastal sage scrub, juniper woodland and oak woodland. Associations include alluvial fan scrub and riparian areas. Friable soil appears to be a necessary requirement for excavating burrows and hiding eggs.	Low potential for orange-throated whiptail to occur on-site due to non-native grasslands, which are present on project site. Not observed during field survey. This is a MSHCP covered species
Aspidoscelis tigris	coastal whiptail	SSC	This species is found in a variety of habitats,	None. No suitable habitat is found within the

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
stejnegeri		MSHCP: Covered	primarily hot and dry open areas with sparse vegetation including chaparral, woodland, and riparian areas. This subspecies is found in coastal southern California, north into Ventura County, and south into Baja California. Additional important habitat characteristics include Important habitat components include shrub cover with accumulated leaf litter, and an abundance of invertebrate prey, particularly termites.	Project site. Not observed during field survey.
Athene cunicularia hypugaea	burrowing owl	SSC, BLMS, BCC MSHCP: Covered	Burrowing owls are a year-round resident of California including habitats of open, dry grassland, and desert. They are generally restricted to mostly flat, open country with suitable nest sites. They use rodent or other burrows for roosting and nesting cover and acquire their burrows from either abandonment or eviction. Burrowing owls typically hunt from a perch.	None. A habitat assessment was performed and no suitable habitat is found within the Project site. Unsuitable burrows were observed, however were not proper size. Not observed during field survey.
Branchinecta lynchi	*Vernal pool fairy shrimp*	FT MSHCP: Covered	The vernal pool fairy shrimp is a small, freshwater crustacean that is found in vernal pools in California. They have slender bodies; large, stalked compound eyes and 11 pairs of swimming legs that also function as gills. They glide gracefully through the water upside down, swimming by beating their legs in a complex, wavelike movement that passes from front to back. Unlike other types of shrimp, the vernal pool fairy shrimp does not have a hard outer shell. Vernal pool fairy shrimp are restricted to vernal pools found in California and southern Oregon.	None. No suitable habitat is found within the Project site. Not observed during the field surveys.
Bombus crotchii	Crotch bumble bee	SCE MSHCP: Not	The crotch bumble bee inhabits open grassland and scrub habitats. This species occurs primarily in California, including the Mediterranean region,	None. No suitable habitat is found within the Project site. Not observed during field survey.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
		Covered	Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California.	
Chaetodipus californicus femoralis),	*Dulzura pocket mouse*	SSC MSHCP: Covered	This species is found in a variety of habitats, primarily found in coastal scrub, chaparral, and grassland.	Moderate. Suitable habitat found on-site. Species is a MSHCP covered species. Not observed during field survey
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	SSC MSHCP: Not Covered	This species is a common resident of sandy herbaceous areas, often on sandy substrates (rocks or coarse gravel) in southwestern California. In San Diego County the species occurs mainly in arid coastal and desert border areas. Habitats include coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT, SE, BLMS, FSS, BCC MSHCP: Covered	This species is an uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in California. Formerly much more common and widespread throughout lowland California. Roosts and nests in densely foliaged, deciduous trees and shrubs in extensive thickets, particularly willows.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Crotalus ruber	red-diamond rattlesnake	SSC, FSS MSHCP: Covered	It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake, however, chamise and red shank associations may offer better structural habitat for	None. No suitable habitat is found within the Project site. Not observed during field survey.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			refuges and food resources for this species than other habitats. They need rodent burrows, cracks in rocks or surface cover objects.	
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE, SSC MSHCP: Covered	Typically found in Riversidean alluvial fan sage scrub and sandy loam soils, alluvial fans and floodplains, and along washes with nearby sage scrub.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Dipodomys stephensi	Stephen's kangaroo rat	FE, ST MSHCP: Covered	This species prefers large areas of disturbed or patchy annual and perennial grasslands and open coastal sage scrub. Preferred perennials plant species include buckwheat and chamise and preferred annual plant species include brome grass. The nearest known populations are in Rancho Guejito and at the Naval Weapons Station in Fallbrook.	Low potential for Stephen's kangaroo rat to occur on-site. One of the Stephens' kangaroo rat's preferred annual plant species is brome grass. During the field survey that site is disturbed with annual fuel abatement, removing any grasses that may occur onsite. Furthermore, the Project site is surrounded by development and busy streets. Not observed during field survey. This is a MSHCP covered species.
Elanus leucurus	*white-tailed kite*	Fully-Protected MSHCP: Covered	Low elevation open grasslands, savannah-like habitats, agricultural areas, wetlands and oak woodlands. Dense canopies used for nesting and cover.	Moderate. Suitable foraging habitat is found within the Project site. Potential impacts may occur during construction.. Any impacts to the species will be mitigated with a Pre-Construction Nesting bird survey as outlined within Mitigation Measure MM-BIO-1Not observed during the field surveys.
Eremophila alpestris actia	California horned lark	WL MSHCP: Covered	A year-long resident within the state and within a variety of open habitats, usually where trees and large shrubs are absent. They are not particular about the nature of the field, so long as it has very little vegetation. Range-wide, they breed in level or gently sloping short grass prairies, montane meadows, "bald" hills, open coastal plains, fallow grain fields, alkali flats, and rangelands. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and	High potential. The disturbed community provides suitable foraging and nesting. However, with the implemented MM BIO 1, impacts are mitigated. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			rangelands. Grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities provide cover.	
Eumops perotis californicus	*western mastiff bat*	SSC MSHCP: Covered	Western mastiff bats are found in a variety of habitats, such as semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban, but the species' distribution may be geomorphically determined, occurring primarily where there are significant rock features offering suitable roosting habitat. A cliff dwelling species, where maternity colonies of 30 to several hundred roost generally under exfoliating rock slabs and rock crevices along cliffs. Western mastiff bats can also be found in similar crevices in large boulders and buildings. When roosting in rock crevices they require a sizable drop from their roost in order to achieve flight. Western mastiff bats prefer deep crevices that are at least 15 or 20 feet above the ground. Foraging is concentrated around bodies of water but also includes coastal sage scrub, chaparral, and grassland habitats.	None. The site lacks suitable roosting habitat for the species. Not observed during the field surveys.
Euphydryas editha quino	*Quino checkerspot butterfly*	FE MSHCP: Covered	Quino checkerspot butterfly habitat is characterized by patchy shrub or small tree landscapes with openings of several meters between large plants, or a landscape of open swales alternating with dense patches of shrubs; such habitats are often collectively termed "scrublands." Quino will frequently perch on vegetation or other substrates to	None. The site lacks suitable habitat for the species. Not observed during the field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			mate or bask, and they require open areas to facilitate movement. Optimal habitat appears to contain little or no invasive exotic vegetation. Sustained drought conditions can lead to extirpation of local populations, and broad scale climate anomalies may lead to phenological incompatibility between Quino checkerspot butterfly and their host plants.	
Icteria virens	yellow-breasted chat	SSC MSHCP: Covered	In southern California they are primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. Breeding habitat must be dense to provide shade and concealment. It winters south to Central America.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Lanius ludovicianus	loggerhead shrike	SSC, BCC MSHCP: Covered	They breed mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. They require tall shrubs or trees (also use fences or power lines); open areas of short grasses, forbs, or bare ground for hunting; and large shrubs or trees for nest placement. These requirements are met in shrub steppe, western juniper woodland, chaparral, oak woodland, oak savannah, riparian edges, desert scrub, Joshua tree habitats, riparian woodland and occasionally through-out in rural and agricultural hedgerows.	Low potential to occur on-site. One of this species' required habitat types is open areas of short grasses, forbs, or bare ground for hunting. These habitat characteristics are present on the project site. Not observed during field survey.
Lasiurus xanthinus	western yellow bat	SSC MSHCP: Not covered	Roost in trees, hanging from the underside of a leaf. Commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non- native palm trees and have also been documented roosting in cottonwood trees.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Laterallus	California black	ST, BLMS,	Black Rails nest in marshes and wet meadows	None. No suitable habitat is found within the

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
jamaicensis coturniculus	rail	BBC, Fully Protected MSHCP: Not Covered	across North America, including riparian marshes, coastal prairies, saltmarshes, and impounded wetlands. All of the habitats have stable shallow water. Nests are primarily made of southern cattail or spikerush and are elevated above the mud substrate in clumps of vegetation. Black rails have also been known to nest on top of a mat of dead vegetation from the previous years' growth.	Project site. Not observed during field survey.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	SSC MSHCP: Covered	The black-tailed jackrabbit is a habitat generalist occurring in open areas or semi-open country, typically in grasslands, agricultural fields or sparse coastal scrub. It primarily is found in arid regions supporting short grass habitats. Jackrabbits typically are not found in high grass or dense brush where it is difficult for them to locomote, and the openness of open scrub habitat probably is preferred over dense chaparral. They have also been found in annual grassland, Riversidean sage scrub, alluvial fan sage scrub, Great Basin sagebrush, chaparral, disturbed habitat, southern willow scrub and juniper woodland. They are not found in high mountain forests. It prefers valley bottoms or intermontane valleys.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Nyctinomops femorosaccus	pocketed free-tailed bat	SSC MSHCP: Not covered	This bat species prefers rocky desert areas with high cliffs or rock outcrops. Rock crevices in cliffs are preferred as roosting sites, since the bat must drop from the roost to gain flight speed. Typically reproduces in rock crevices, caverns, or buildings. Ranges from southern California to New Mexico.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Perognathus longimembris brevinasus	Los Angeles pocket mouse	SSC MSHCP: Covered	Prefers sandy soil for burrowing. Also known to occur on gravel washes and in rocky soils. Associated with coastal scrub.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Phrynosoma blainvillii	coast horned lizard	SSC, BLMS	Occurs in a variety of vegetation types including coastal sage scrub, chaparral, annual grassland,	None. No suitable habitat is found within the Project site. Not observed during field

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
		MSHCP: Covered	oak woodland and riparian woodlands.	survey.
Polioptila californica californica	coastal California gnatcatcher	FT, SSC MSHCP: Covered	A non-migratory, permanent resident of coastal sage scrub habitat, which is a broad category of vegetation that includes the following plant communities: Ventura coastal sage scrub, Diegan coastal sage scrub, maritime succulent scrub, Riversidean sage scrub, Riversidean alluvial fan sage scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub. They also use chaparral, grassland and riparian habitats next to coastal sage scrub, but these habitats are used dispersal and foraging. They avoid nesting on steep slopes.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Spea hammondii	western spadefoot	SSC, BLMS MSHCP: Covered	May be found in coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, but is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas. Within these habitats, they require rain pools/vernal pools in which to reproduce and that persist with more than three weeks of standing water in which to metamorphose successfully. They can also breed in slow-moving streams (e.g., areas flooded by intermittent streams). Water breeding sites must lack fish, bullfrogs, and crayfish in order for to successfully reproduce and metamorphose. They estivates in sandy, gravelly soil in upland habitats adjacent to potential breeding sites in burrows approximating 1 meter in depth.	None. No suitable habitat is found within the Project site. Not observed during field survey.
Streptocephalus woottoni	Riverside fairy shrimp	FT MSHCP: Covered	Coastal scrub; valley and foothill grassland; vernal pool; wetland.	None. No suitable habitat is found within the Project site.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
Vireo bellii pusillus	least Bell's vireo	FE, SE MSHCP: Covered	Least Bell's vireos primarily occupy riverine riparian habitats that typically feature dense cover within 1-2 m of the ground and a dense, stratified canopy. Typically, it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses. 2,000 feet elevation in the interior.	None. No suitable habitat is found within the Project site. Not observed during field survey.

Legend
<u>*Federal Endangered Species Act (ESA) Listing Codes:*</u> federal listing is pursuant to the Federal Endangered Species Act (ESA) of 1973, as amended. The official federal listing of Endangered and Threatened Animals is published in the Federal Register, 50 CFR 17.11. FE = federally listed as endangered: any species, subspecies, or variety of plant or animal that is in danger of extinction throughout all or a significant portion of their range. FT = federally listed as threatened: any species, subspecies, or variety of plant or animal that is considered likely to become endangered throughout all or a significant portion of its range within the foreseeable future. FC = federal candidate for listing. FPT = federally proposed threatened. <u>*California Endangered Species Act (CESA) Listing Codes:*</u> state listing is pursuant to §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code, relating to listing of Endangered, Threatened and Rare species of plants and animals. The official California listing of Endangered and Threatened animals is contained in the California Code of Regulations, Title 14, and Section 670.5. SE = state listed as endangered: any species, subspecies, or variety of plant or animal that are in serious danger of becoming extinct throughout all, or a significant portion, of their range. ST = state listed as threatened: any species, subspecies, or variety of plant or animal that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future. SCT = state candidate for listing as threatened. SCE = state candidate for listing as endangered. <u>*California Department of Fish and Wildlife (CDFW):*</u> SSC = species of special concern: status applies to animals which 1) are declining at a rate that could result in listing, or 2) historically occurred in low

numbers and known threats to their persistence currently exist. The CDFW has designated certain vertebrate species as "species of special concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
Fully protected = animal species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.
WL = watch list: these birds have been designated as "Taxa to Watch" in the *California Bird Species of Special Concern report* (Shuford and Gardali 2008). The report defines "Taxa to Watch" as those that are not on the current special concern list that (1) formerly were on the 1978 (Remsen 1978) or 1992 (CDFG 1992) special concern lists and are not currently listed as state threatened and endangered; (2) have been removed (delisted) from either the state or federal threatened and endangered lists (and remain on neither), or (3) are currently designated as "fully protected" in California.

United States Fish and Wildlife Service (USFWS):
BCC = USFWS bird of conservation concern: listed in the USFWS'S 2008 *Birds of Conservation Concern* report. The report identifies species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. While all of the bird species included in the report are priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing.

United States Forest Service (USFS):
FSS = Forest Service sensitive: those plant and animal species identified by a Regional Forester that are not listed or proposed for listing under the ESA and for which population viability is a concern, as evidenced by: (a) significant current or predicted downward trends in population numbers or density or (b) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution."

United States Bureau of Land Management (BLM):
BLMS = BLM sensitive: those plant and animal species on BLM administered lands and that are (1) under status review by the USFWS/NMFS; or (2) whose numbers are declining so rapidly that federal listing my become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats. BLM policy is to provide the same level of protection as USFWS candidate species.

California Department of Forestry and Fire Protection (CDF):
CDF: S = CDF sensitive: species is a California Department of Forestry and Fire Protection sensitive species. The Board of Forestry classifies as sensitive species those species that warrant special protection during timber operations.

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Appendix C

Cultural Resources Assessment

CULTURAL RESOURCES STUDY FOR THE CYPRESS SANDS PROJECT

CITY OF MENIFEE, RIVERSIDE COUNTY, CALIFORNIA

APN 333-050-034

Lead Agency:

City of Menifee
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Menifee, California 92586

Preparer:

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Signature

Project Proponent:

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July 20, 2022

Archaeological Database Information

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Client/Project Proponent:	Empire Construction Management 2280 Wardlow Circle, Suite 250 Corona, California 92878
Report Date:	July 20, 2022
Report Title:	Cultural Resources Study for the Cypress Sands Project, City of Menifee, Riverside County, California (APN 333-050-034)
Type of Study:	Phase I Cultural Resources Survey
USGS Quadrangles:	Section 22, Township 5 South, Range 3 West of the USGS (7.5-minute) *Romoland*, *California* Quadrangle
Acreage:	Approximately nine acres
Key Words:	Survey; no significant resources identified; *Romoland* USGS Quadrangle; mitigation measures are not recommended.

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MANAGEMENT SUMMARY/ABSTRACT

In response to a request from the project applicant, Brian F. Smith and Associates, Inc. (BFSA) conducted a cultural resources study for the proposed Cypress Sands Project. The project proposes to construct a residential apartment complex. The approximately nine-acre project is located north of McCall Boulevard in the city of Menifee, Riverside County, California. The subject property is bound by Chambers Avenue to the north, Antelope Road to the east, Chatham Lane to the west, and the future extension of Tiogo Lane to the south. The project, identified as Assessor's Parcel Number (APN) 333-050-034, is situated within Section 22, Township 5 South, Range 3 West of the USGS (7.5-minute) *Romoland, California* topographic quadrangle.

The lead agency for the project is the City of Menifee. The purpose of this investigation was to locate and record any cultural resources present within the project and subsequently evaluate any resources as part of the City of Menifee's environmental review process conducted in compliance with the California Environmental Quality Act (CEQA). The archaeological investigation of the project also includes the review of an archaeological records search performed at the Eastern Information Center (EIC) at the University of California, at Riverside (UCR) in order to assess previous archaeological studies and identify any recorded archaeological sites within the project or in the immediate vicinity. However, due to the limitations imposed by the evolving circumstances related to the COVID-19 pandemic, records search access has become limited with delays for the foreseeable future. As such, as of the date of this report, the archaeological records search results are pending from the EIC at UCR. A Sacred Lands File (SLF) search was also requested from the Native American Heritage Commission (NAHC).

Survey conditions were excellent, as the property had been recently disced and cleared of almost all vegetation. The survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately 10-meter intervals, which covered all areas of the project. The entire property is currently a plowed field and was entirely accessible at the time of the survey. The soil within the project primarily consisted of sandy loam devoid of any notably sized cobbles or rocks. Further, the property does not contain any bedrock outcroppings, which within this area of Riverside County are often associated with the most common prehistoric site type. Vegetation within the subject property was minimal and ground visibility was good.

The archaeological survey of the Cypress Sands Project did not result in the identification of any cultural resources within the project. Due to the extensive agricultural disturbance of the property and the absence of any indications of cultural resources within the project, mitigation monitoring will not be recommended. Although no monitoring is recommended, the recommendations section of this report includes procedures for the unlikely inadvertent discovery of cultural resources and/or human remains. A copy of this report will be permanently filed with the EIC at UCR. All notes, photographs, and other materials related to this project will be curated at the archaeological laboratory of BFSA in Poway, California.

1.0 INTRODUCTION

1.1 Project Description

The archaeological survey program was conducted in order to comply with CEQA and City of Menifee environmental guidelines. The approximately nine-acre project (APN 333-050-034) is located north of McCall Boulevard within the city of Menifee in Riverside County, California (Figure 1.1–1). The subject property is bound by Chambers Avenue to the north, Antelope Road to the east, Chatham Lane to the west, and the future extension of Tiogo Lane to the south. The project is situated within Section 22 of the USGS 7.5-minute *Romoland, California* topographic quadrangle, Township 5 South, Range 3 West (Figure 1.1–2) and proposes to construct a residential apartment complex (Figure 1.1–3).

1.2 Environmental Setting

The Cypress Sands Project is situated in west-central Riverside County, within the limits of the city of Menifee. The property is situated within the northeastern area of the city, on relatively flat agricultural land near the boundary of Perris and Menifee valleys just west of foothills associated with Menifee Mountain to the southeast. The general geomorphology of the region consists of valley flatland surrounded by moderate to steep slopes with rounded summits. Elevations on the project range from approximately 1,485 to 1,500 feet above mean sea level and soils consist of Yokohl loam, 2 to 8 percent slopes (YbC) and Garretson gravelly very fine sandy loam, 2 to 8 percent slopes (GdC) (NRCS 2019). Small drainages are dry in the summer; only the largest streams (such as the Santa Ana River) retain water throughout the year.

Regionally, the project lies within the central part of the Perris Block; a structural block bounded on the west by the Elsinore fault zone, and on the east by the San Jacinto fault zone. The hills surrounding the region consist of eroded masses of exhumed Cretaceous and older crystalline and metamorphic rocks separated by flat valleys filled with geologically young sediments. The project is located on middle to early Pleistocene (approximately 0.5 to 1.8 million years old) very old alluvial fan sediments, consisting of well-dissected, well-indurated, reddish-brown alluvial fan deposits of sand and gravel.

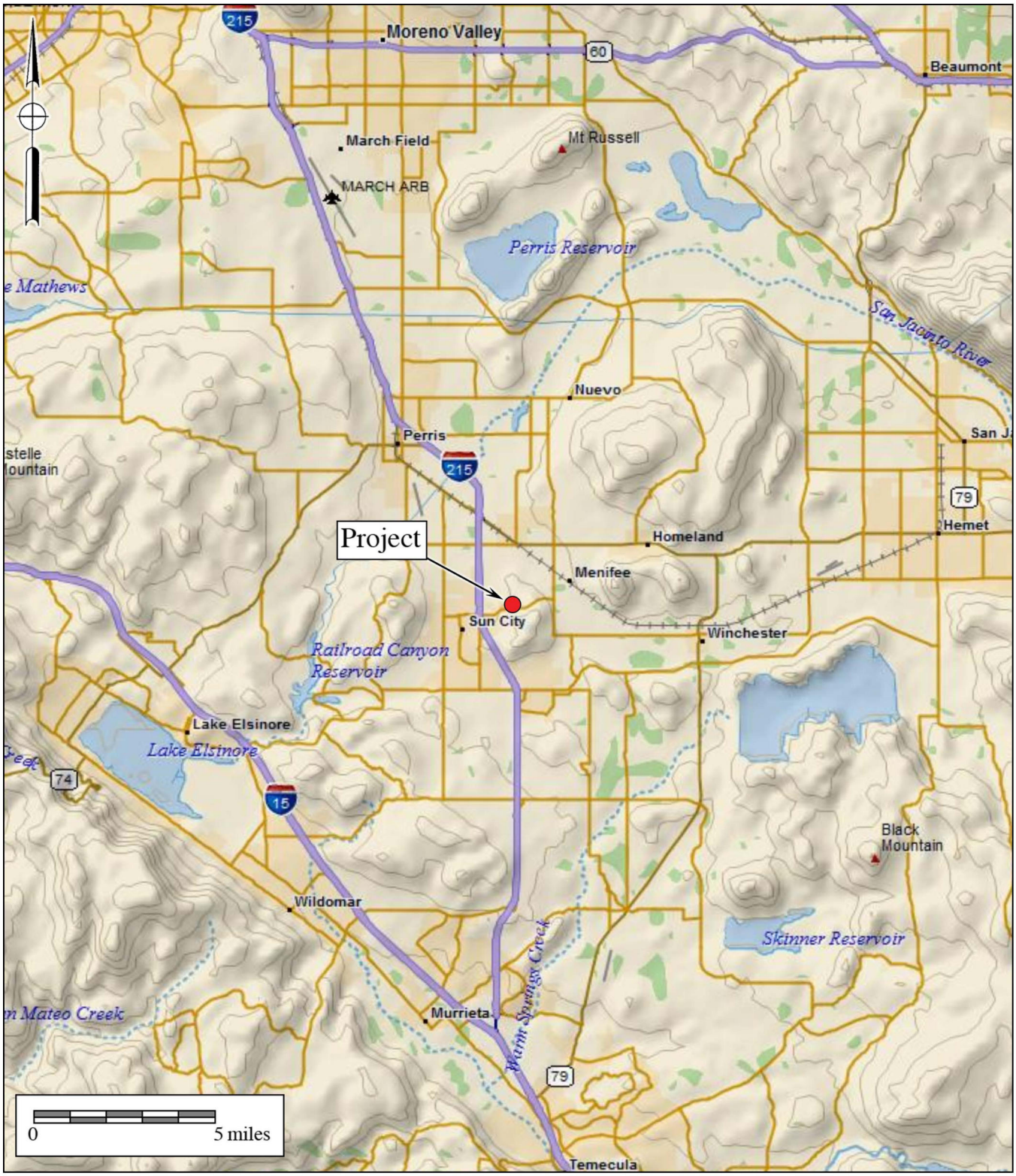


Figure 1.1–1

General Location Map

The Cypress Sands Project

DeLorme (1:250,000)

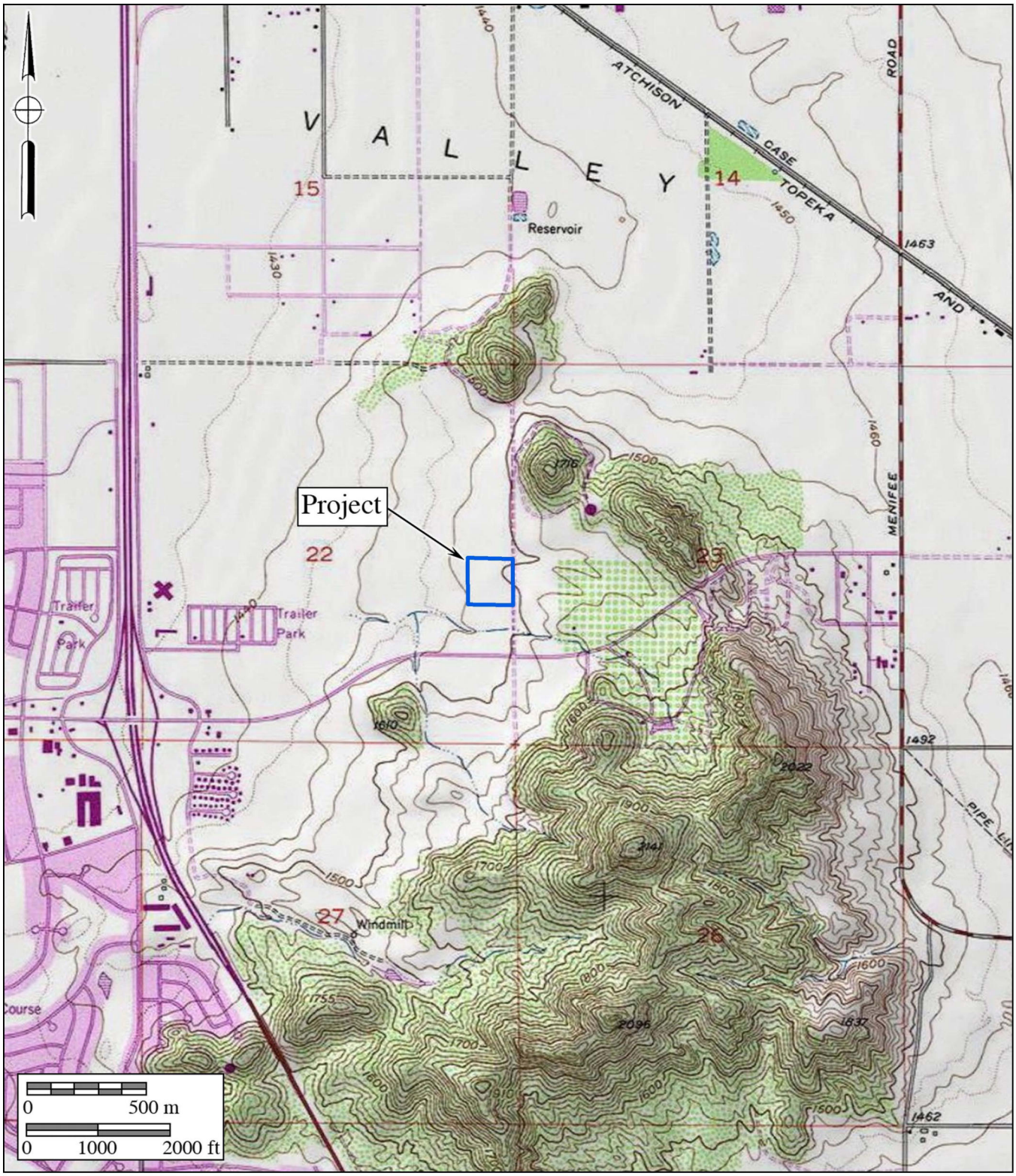
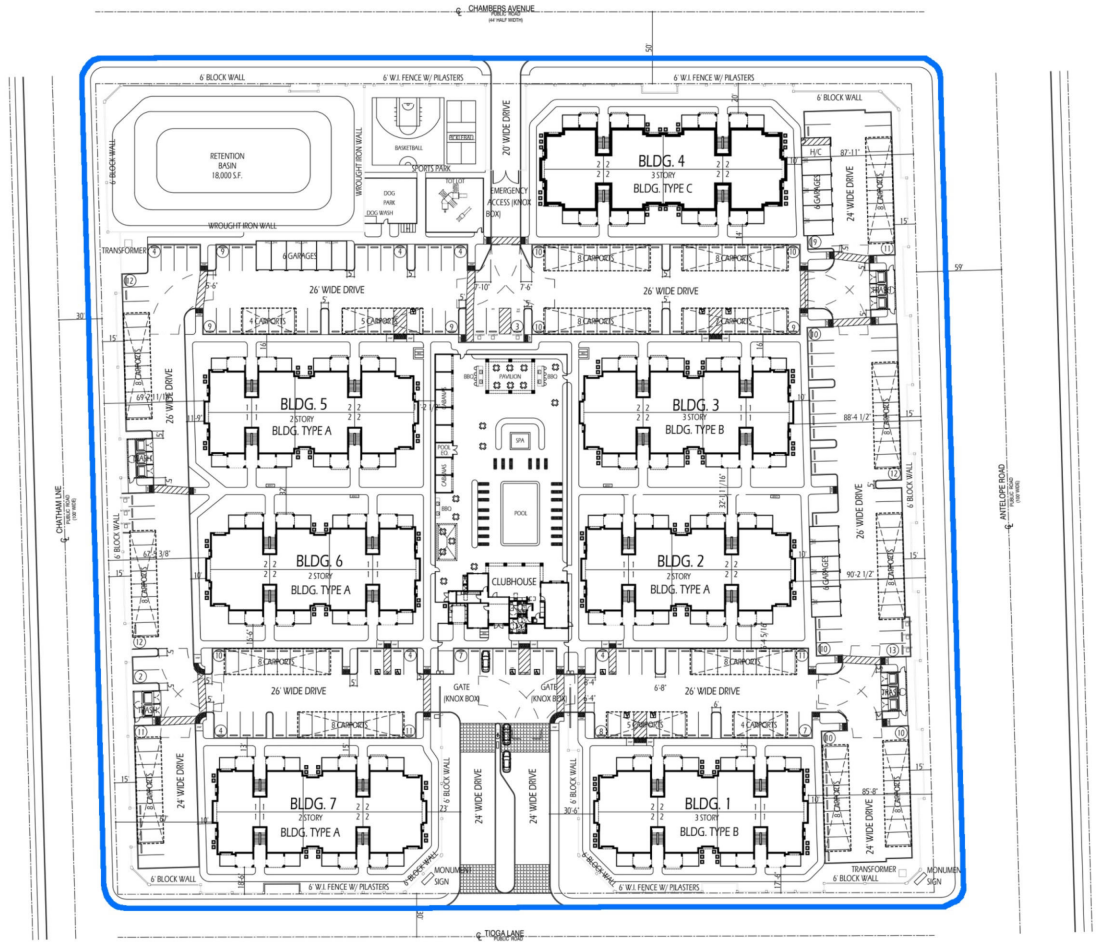


Figure 1.1–2

Project Location Map

The Cypress Sands Project

USGS *Romoland* Quadrangle (7.5-minute series)



Legend

Project Boundary

Figure 1.1–3

Site Plan Map

The Cypress Sands Project

Vegetation in the area of the property is dominated by non-native weeds and grasses that are associated with land that has been farmed for several decades. Mammals within the region include mule deer, coyote, bobcat, mountain lion, ground squirrel, and kangaroo rat; birds include hawk, eagle, owl, quail, mourning dove, mockingbird, jay, heron, crow, finch, and sparrow. Species of concern in the area include the cactus wren, California gnatcatcher, least Bell's vireo, foothill and mountain yellow-legged frog, orange-throated whiptail lizard, and California mountain kingsnake (USDA and USDI 2001).

The decision to request this investigation was based upon the cultural resource sensitivity of the locality as suggested by known site density and predictive modeling. Sensitivity for cultural resources in a given area is usually indicated by known settlement patterns, which in west-central Riverside County were focused around fresh water resources and a food supply. During the prehistoric period, fresh water could have been obtainable on a year-round basis from local seasonal drainages and the San Jacinto River located to the northwest of the project. During the prehistoric period, vegetation near the project area provided sufficient food resources to support prehistoric human occupants. Animals that inhabited the project area during prehistoric times included rabbits, squirrels, gophers, mice, rats, deer, and coyotes, in addition to a variety of reptiles and amphibians. The property currently includes agricultural land in an area where most land is designated for development.

1.3 Cultural Setting – Archaeological Perspectives

The archaeological perspective seeks to reconstruct past cultures based upon the material remains left behind. This is done using a range of scientific methodologies, almost all of which draw from evolutionary theory as the base framework. Archaeology allows one to look deeper into history or prehistory to see where the beginnings of ideas manifest via analysis of material culture, allowing for the understanding of outside forces that shape social change. Thus, the archaeological perspective allows one to better understand the consequences of the history of a given culture upon modern cultures. Archaeologists seek to understand the effects of past contexts of a given culture on *this* moment in time, not culture in context *in* the moment.

Despite this, a distinction exists between "emic" and "etic" ways of understanding material culture, prehistoric lifeways, and cultural phenomena in general (Harris 1991). While "emic" perspectives serve the subjective ways in which things are perceived and interpreted by the participants within a culture, "etic" perspectives are those of an outsider looking in hoping to attain a more scientific or "objective" understanding of the given phenomena. Archaeologists, by definition, will almost always serve an etic perspective as a result of the very nature of their work. As indicated by Laylander et al. (2014), it has sometimes been suggested that etic understanding, and therefore an archaeological understanding, is an imperfect and potentially ethnocentric attempt to arrive at emic understanding. In contrast to this, however, an etic understanding of material culture, cultural phenomena, and prehistoric lifeways can address significant dimensions of culture that lie entirely beyond the understanding or interest of those solely utilizing an emic perspective.

As Harris (1991:20) appropriately points out, "Etic studies often involve the measurement and juxtaposition of activities and events that native informants find inappropriate or meaningless." This is also likely true of archaeological comparisons and juxtapositions of material culture. However, culture as a whole does not occur in a vacuum and is the result of several millennia of choices and consequences influencing everything from technology, to religions, to institutions. Archaeology allows for the ability to not only see what came before, but to see how those choices, changes, and consequences affect the present. Where possible, archaeology should seek to address both emic and etic understandings to the extent that they may be recoverable from the archaeological record as manifestations of patterned human behavior (Laylander et al. 2014).

To that point, the culture history offered herein is primarily based upon archaeological (etic) and ethnographic (partially emic and partially etic) information. It is understood that the ethnographic record and early archaeological records were incompletely and imperfectly collected. In addition, in most cases, more than a century of intensive cultural change and cultural evolution had elapsed since the terminus of the prehistoric period. Coupled with the centuries and millennia of prehistoric change separating the "ethnographic present" from the prehistoric past, this has affected the emic and etic understandings of prehistoric cultural settings. Regardless, there remains a need to present the changing cultural setting within the region under investigation. As a result, both archaeological and Native American perspectives are offered when possible.

1.3.1 Introduction

Paleo Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Takic groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Encinitas Tradition, Milling Stone Horizon, La Jolla Complex, Pauma Complex, and San Luis Rey Complex, since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component present in the Riverside County area was primarily represented by the Cahuilla, Gabrielino, and Luiseño Indians.

Absolute chronological information, where possible, will be incorporated into this archaeological discussion to examine the effectiveness of continuing to interchangeably use these terms. Reference will be made to the geological framework that divides the archaeologically-based culture chronology of the area into four segments: the late Pleistocene (20,000 to 10,000 years before the present [YBP]), the early Holocene (10,000 to 6,650 YBP), the middle Holocene (6,650 to 3,350 YBP), and the late Holocene (3,350 to 200 YBP).

1.3.2 Paleo Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

Archaeologically, the Paleo Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and moist, which allowed for glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin lands (Moratto 1984). However, by the terminus of the late Pleistocene, the

climate became warmer, which caused the glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, extinction of Pleistocene megafauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending upon the particular area of the coast, was near the 30-meter isobath, or two to six kilometers further west than its present location (Masters 1983).

Paleo Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

1.3.3 Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

Archaeological data indicates that between 9,000 and 8,000 YBP, a widespread complex was established in the southern California region, primarily along the coast (Warren and True 1961). This complex is locally known as the La Jolla Complex (Rogers 1939; Moriarty 1966), which is regionally associated with the Encinitas Tradition (Warren 1968) and shares cultural components with the widespread Milling Stone Horizon (Wallace 1955). The coastal expression of this complex appeared in southern California coastal areas and focused upon coastal resources and the development of deeply stratified shell middens that were primarily located around bays and lagoons. The older sites associated with this expression are located at Topanga Canyon, Newport Bay, Agua Hedionda Lagoon, and some of the Channel Islands. Radiocarbon dates from sites attributed to this complex span a period of over 7,000 years in this region, beginning over 9,000 YBP.

The Encinitas Tradition is best recognized for its pattern of large coastal sites characterized by shell middens, grinding tools that are closely associated with the marine resources of the area, cobble-based tools, and flexed human burials (Shumway et al. 1961; Smith and Moriarty 1985). While ground stone tools and scrapers are the most recognized tool types, coastal Encinitas Tradition sites also contain numerous utilized flakes, which may have been used to pry open shellfish. Artifact assemblages at coastal sites indicate a subsistence pattern focused upon shellfish collection and nearshore fishing. This suggests an incipient maritime adaptation with regional similarities to more northern sites of the same period (Koerper et al. 1986). Other artifacts associated with Encinitas Tradition sites include stone bowls, doughnut stones, discoidals, stone balls, and stone, bone, and shell beads.

The coastal lagoons in southern California supported large Milling Stone Horizon populations circa 6,000 YBP, as is shown by numerous radiocarbon dates from the many sites adjacent to the lagoons. The ensuing millennia were not stable environmentally, and by 3,000 YBP, many of the coastal sites in central San Diego County had been abandoned (Gallegos 1987, 1992). The abandonment of the area is usually attributed to the sedimentation of coastal lagoons and the resulting deterioration of fish and mollusk habitat. This is a well-documented situation at

Batiquitos Lagoon, where over a two-thousand-year period, dominant mollusk species occurring in archaeological middens shift from deep-water mollusks (*Argopecten* sp.) to species tolerant of tidal flat conditions (*Chione* sp.), indicating water depth and temperature changes (Miller 1966; Gallegos 1987).

This situation likely occurred for other small drainages (Buena Vista, Agua Hedionda, San Marcos, and Escondido creeks) along the central San Diego coast where low flow rates did not produce sufficient discharge to flush the lagoons they fed (Buena Vista, Agua Hedionda, Batiquitos, and San Elijo lagoons) (Byrd 1998). Drainages along the northern and southern San Diego coastline were larger and flushed the coastal hydrological features they fed, keeping them open to the ocean and allowing for continued human exploitation (Byrd 1998). Peñasquitos Lagoon exhibits dates as late as 2,355 YBP (Smith and Moriarty 1985) and San Diego Bay showed continuous occupation until the close of the Milling Stone Horizon (Gallegos and Kyle 1988). Additionally, data from several drainages in Camp Pendleton indicate a continued occupation of shell midden sites until the close of the period, indicating that coastal sites were not entirely abandoned during this time (Byrd 1998).

By 5,000 YBP, an inland expression of the La Jolla Complex is evident in the archaeological record, exhibiting influences from the Campbell Tradition from the north. These inland Milling Stone Horizon sites have been termed "Pauma Complex" (True 1958; Warren et al. 1961; Meighan 1954). By definition, Pauma Complex sites share a predominance of grinding implements (manos and metates), lack mollusk remains, have greater tool variety (including atlatl dart points, quarry-based tools, and crescentics), and seem to express a more sedentary lifestyle with a subsistence economy based upon the use of a broad variety of terrestrial resources. Although originally viewed as a separate culture from the coastal La Jolla Complex (True 1980), it appears that these inland sites may be part of a subsistence and settlement system utilized by the coastal peoples. Evidence from the 4S Project in inland San Diego County suggests that these inland sites may represent seasonal components within an annual subsistence round by La Jolla Complex populations (Raven-Jennings et al. 1996). Including both coastal and inland sites of this time period in discussions of the Encinitas Tradition, therefore, provides a more complete appraisal of the settlement and subsistence system exhibited by this cultural complex.

More recent work by Sutton has identified a more localized complex known as the Greven Knoll Complex. The Greven Knoll Complex is a redefined northern inland expression of the Encinitas Tradition first put forth by Mark Sutton and Jill Gardner (2010). Sutton and Gardner (2010:25) state that "[t]he early millingstone archaeological record in the northern portion of the interior southern California was not formally named but was often referred to as 'Inland Millingstone,' 'Encinitas,' or even 'Topanga.'" Therefore, they proposed that all expressions of the inland Milling Stone in southern California north of San Diego County be grouped together in the Greven Knoll Complex.

The Greven Knoll Complex, as postulated by Sutton and Gardner (2010), is broken into three phases and obtained its name from the type-site Greven Knoll located in Yucaipa, California.

Presently, the Greven Knoll Site is part of the Yukaipa't Site (SBR-1000) and was combined with the adjacent Simpson Site. Excavations at Greven Knoll recovered manos, metates, projectile points, discoidal cogged stones, and a flexed inhumation with a possible cremation (Kowta 1969:39). It is believed that the Greven Knoll Site was occupied between 5,000 and 3,500 YBP. The Simpson Site contained mortars, pestles, side-notched points, and stone and shell beads. Based upon the data recovered at these sites, Kowta (1969:39) suggested that "coastal Milling Stone Complexes extended to and interdigitated with the desert Pinto Basin Complex in the vicinity of the Cajon Pass."

Phase I of the Greven Knoll Complex is generally dominated by the presence of manos and metates, core tools, hammerstones, large dart points, flexed inhumations, and occasional cremations. Mortars and pestles are absent from this early phase, and the subsistence economy emphasized hunting. Sutton and Gardener (2010:26) propose that the similarity of the material culture of Greven Knoll Phase I and that found in the Mojave Desert at Pinto Period sites indicates that the Greven Knoll Complex was influenced by neighbors to the north at that time. Accordingly, Sutton and Gardner (2010) believe that Greven Knoll Phase I may have appeared as early as 9,400 YBP and lasted until about 4,000 YBP.

Greven Knoll Phase II is associated with a period between 4,000 and 3,000 YBP. Artifacts common to Greven Knoll Phase II include manos and metates, Elko points, core tools, and discoidals. Pestles and mortars are present; however, they are only represented in small numbers. Finally, there is an emphasis upon hunting and gathering for subsistence (Sutton and Gardner 2010:8).

Greven Knoll Phase III includes manos, metates, Elko points, scraper planes, choppers, hammerstones, and discoidals. Again, small numbers of mortars and pestles are present. Greven Knoll Phase III spans from approximately 3,000 to 1,000 YBP and shows a reliance upon seeds and yucca. Hunting is still important, but bones seem to have been processed to obtain bone grease more often in this later phase (Sutton and Gardner 2010:8).

The shifts in food processing technologies during each of these phases indicate a change in subsistence strategies; although people were still hunting for large game, plant-based foods eventually became the primary dietary resource (Sutton 2011a). Sutton's (2011b) argument posits that the development of mortars and pestles during the middle Holocene can be attributed to the year-round exploitation of acorns as a main dietary provision. Additionally, the warmer and drier climate may have been responsible for groups from the east moving toward coastal populations, which is archaeologically represented by the interchange of coastal and eastern cultural traits (Sutton 2011a).

1.3.4 Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790)

Many Luiseño hold the world view that, as a population, they were created in southern California. Archaeological and anthropological data, however, proposes a scientific/archaeological perspective, suggesting that at approximately 1,350 YBP, Takic-speaking

groups from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. An analysis of the Takic expansion by Sutton (2009) indicates that inland southern California was occupied by "proto-Yuman" populations before 1,000 YBP. The comprehensive, multi-phase model offered by Sutton (2009) employs linguistic, ethnographic, archaeological, and biological data to solidify a reasonable argument for population replacement of Takic groups to the north by Penutians (Laylander 1985). As a result, it is believed that Takic expansion occurred starting around 3,500 YBP moving toward southern California, with the Gabrielino language diffusing south into neighboring Yuman (Hokan) groups around 1,500 to 1,000 YBP, possibly resulting in the Luiseño dialect.

Based upon Sutton's model, the final Takic expansion would not have occurred until about 1,000 YBP, resulting in Vanyume, Serrano, Cahuilla, and Cupeño dialects. The model suggests that the Luiseño did not simply replace Hokan speakers, but were rather a northern San Diego County/southern Riverside County Yuman population who adopted the Takic language. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between A.D. 400 and 600 and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

1.3.5 Protohistoric Period (Late Holocene: 1790 to Present)

Ethnohistoric and ethnographic evidence indicates that three Takic-speaking groups occupied portions of Riverside County: the Cahuilla, the Gabrielino, and the Luiseño. The geographic boundaries between these groups in pre- and proto-historic times are difficult to place, but the project is located well within the borders of ethnographic Luiseño territory. This group was a seasonal hunting and gathering people with cultural elements that were very distinct from Archaic Period peoples. These distinctions include cremation of the dead, the use of the bow and arrow, and exploitation of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of available marine resources by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. Elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included trade of Obsidian Butte obsidian and other resources from the eastern deserts, as well as steatite from the Channel Islands.

According to Charles Handley (1967), the primary settlements of Late Prehistoric Luiseño Indians in the San Jacinto Plain were represented by Ivah and Soboba near Soboba Springs, Jusipah near the town of San Jacinto, Ararah in Webster's Canyon en route to Idyllwild, Pahsitha near Big Springs Ranch southeast of Hemet, and Corova in Castillo Canyon. These locations share features

such as the availability of food and water resources. Features of this land use include petroglyphs and pictographs, as well as widespread milling, which is evident in bedrock and portable implements. Groups in the vicinity of the project, neighboring the Luiseño, include the Cahuilla and the Gabrielino. Ethnographic data for the three groups is presented below.

Luiseño: An Archaeological and Ethnographic Perspective

When contacted by the Spanish in the sixteenth century, the Luiseño occupied a territory bounded on the west by the Pacific Ocean, on the east by the Peninsular Ranges mountains at San Jacinto (including Palomar Mountain to the south and Santiago Peak to the north), on the south by Agua Hedionda Lagoon, and on the north by Aliso Creek in present-day San Juan Capistrano. The Luiseño were a Takic-speaking people more closely related linguistically and ethnographically to the Cahuilla, Gabrielino, and Cupeño to the north and east rather than the Kumeyaay who occupied territory to the south. The Luiseño differed from their neighboring Takic speakers in having an extensive proliferation of social statuses, a system of ruling families that provided ethnic cohesion within the territory, a distinct worldview that stemmed from the use of datura (a hallucinogen), and an elaborate religion that included the creation of sacred sand paintings depicting the deity Chingichngish (Bean and Shipek 1978; Kroeber 1976).

Subsistence and Settlement

The Luiseño occupied sedentary villages most often located in sheltered areas in valley bottoms, along streams, or along coastal strands near mountain ranges. Villages were located near water sources to facilitate acorn leaching and in areas that offered thermal and defensive protection. Villages were comprised of areas that were publicly and privately (by family) owned. Publicly owned areas included trails, temporary campsites, hunting areas, and quarry sites. Inland groups had fishing and gathering sites along the coast that were intensively used from January to March when inland food resources were scarce. During October and November, most of the village would relocate to mountain oak groves to harvest acorns. The Luiseño remained at village sites for the remainder of the year, where food resources were within a day's travel (Bean and Shipek 1978; Kroeber 1976).

The most important food source for the Luiseño was the acorn, six different species of which were used (*Quercus californica, Quercus agrifolia, Quercus chrysolepis, Quercus dumosa, Quercus engelmannii,* and *Quercus wislizenii*). Seeds, particularly of grasses, flowering plants, and mints, were also heavily exploited. Seed-bearing species were encouraged through controlled burns, which were conducted at least every third year. A variety of other stems, leaves, shoots, bulbs, roots, and fruits were also collected. Hunting augmented this vegetal diet. Animal species taken included deer, rabbit, hare, woodrat, ground squirrel, antelope, quail, duck, freshwater fish from mountain streams, marine mammals, and other sea creatures such as fish, crustaceans, and mollusks (particularly abalone, or *Haliotis* sp.). In addition, a variety of snakes, small birds, and rodents were eaten (Bean and Shipek 1978; Kroeber 1976).

Social Organization

Social groups within the Luiseño nation consisted of patrilinear families or clans, which were politically and economically autonomous. Several clans comprised a religious party, or nota, which was headed by a chief who organized ceremonies and controlled economics and warfare. The chief had assistants who specialized in particular aspects of ceremonial or environmental knowledge and who, with the chief, were part of a religion-based social group with special access to supernatural power, particularly that of Chingichngish. The positions of chief and assistants were hereditary, and the complexity and multiplicity of these specialists' roles likely increased in coastal and larger inland villages (Bean and Shipek 1978; Kroeber 1976; Strong 1929).

Marriages were arranged by the parents, often made to forge alliances between lineages. Useful alliances included those between groups of differing ecological niches and those that resulted in territorial expansion. Residence was patrilocal (Bean and Shipek 1978; Kroeber 1976). Women were primarily responsible for plant gathering and men principally hunted, but at times, particularly during acorn and marine mollusk harvests, there was no division of labor. Elderly women cared for children and elderly men participated in rituals, ceremonies, and political affairs. They were also responsible for manufacturing hunting and ritual implements. Children were taught subsistence skills at the earliest age possible (Bean and Shipek 1978; Kroeber 1976).

Material Culture

House structures were conical, partially subterranean, and thatched with reeds, brush, or bark. Ramadas were rectangular, protected workplaces for domestic chores such as cooking. Ceremonial sweathouses were important in purification rituals; these were round and partially subterranean thatched structures covered with a layer of mud. Another ceremonial structure was the wámkis (located in the center of the village, serving as the place of rituals), where sand paintings and other rituals associated with the Chingichngish religious group were performed (Bean and Shipek 1978; Kroeber 1976).

Clothing was minimal; women wore a cedar-bark and netted twine double apron and men wore a waist cord. In cold weather, cloaks or robes of rabbit fur, deerskin, or sea otter fur were worn by both sexes. Footwear included deerskin moccasins and sandals fashioned from yucca fibers. Adornments included bead necklaces and pendants made of bone, clay, stone, shell, bear claw, mica, deer hooves, and abalone shell. Men wore ear and nose piercings made from cane or bone, which were sometimes decorated with beads. Other adornments were commonly decorated with semiprecious stones including quartz, topaz, garnet, opal, opalite, agate, and jasper (Bean and Shipek 1978; Kroeber 1976).

Hunting implements included the bow and arrow. Arrows were tipped with either a carved, fire-hardened wood tip or a lithic point, usually fashioned from locally available metavolcanic material or quartz. Throwing sticks fashioned from wood were used in hunting small game, while deer head decoys were used during deer hunts. Coastal groups fashioned dugout canoes for nearshore fishing and harvested fish with seines, nets, traps, and hooks made of bone or abalone

shell (Bean and Shipek 1978; Kroeber 1976).

The Luiseño had a well-developed basket industry. Baskets were used in resource gathering, food preparation, storage, and food serving. Ceramic containers were shaped by paddle and anvil and fired in shallow, open pits to be used for food storage, cooking, and serving. Other utensils included wood implements, steatite bowls, and ground stone manos, metates, mortars, and pestles (Bean and Shipek 1978; Kroeber 1976). Additional tools such as knives, scrapers, choppers, awls, and drills were also used. Shamanistic items include soapstone or clay smoking pipes and crystals made of quartz or tourmaline (Bean and Shipek 1978; Kroeber 1976).

Cahuilla: An Archaeological and Ethnographic Perspective

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains to the west, Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla are a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differ from the Luiseño and Gabrielino in that their religion is more similar to the Mohave tribes of the eastern deserts than the Chingichngish religious group of the Luiseño and Gabrielino. The following is a summary of ethnographic data regarding this group (Bean 1978; Kroeber 1976).

Subsistence and Settlement

Cahuilla villages were typically permanent and located on low terraces within canyons in proximity to water sources. These locations proved to be rich in food resources and also afforded protection from prevailing winds. Villages had areas that were publicly owned and areas that were privately owned by clans, families, or individuals. Each village was associated with a particular lineage and series of sacred sites that included unique petroglyphs and pictographs. Villages were occupied throughout the year; however, during a several-week period in the fall, most of the village members relocated to mountain oak groves to take part in acorn harvesting (Bean 1978; Kroeber 1976).

The Cahuilla's use of plant resources is well documented. Plant foods harvested by the Cahuilla included valley oak acorns and single-leaf pinyon pine nuts. Other important plant species included bean and screw mesquite, agave, Mohave yucca, cacti, palm, chia, quail brush, yellowray goldfield, goosefoot, manzanita, catsclaw, desert lily, mariposa lily, and a number of other species such as grass seed. A number of agricultural domesticates were acquired from the Colorado River tribes including corn, bean, squash, and melon grown in limited amounts. Animal species taken included deer, bighorn sheep, pronghorn antelope, rabbit, hare, rat, quail, dove, duck, roadrunner, and a variety of rodents, reptiles, fish, and insects (Bean 1978; Kroeber 1976).

Social Organization

The Cahuilla was not a political nation, but rather a cultural nationality with a common language. Two non-political, non-territorial patrimoieties were recognized: the Wildcats (túktem) and the Coyotes (?ístam). Lineage and kinship were memorized at a young age among the Cahuilla, providing a backdrop for political relationships. Clans were comprised of three to 10 lineages; each lineage owned a village site and specific resource areas. Lineages within a clan cooperated in subsistence activities, defense, and rituals (Bean 1978; Kroeber 1976).

A system of ceremonial hierarchy operated within each lineage. The hierarchy included the lineage leader, who was responsible for leading subsistence activities, guarding the sacred bundle, and negotiating with other lineage leaders in matters concerning land use, boundary disputes, marriage arrangements, trade, warfare, and ceremonies. The ceremonial assistant to the lineage leader was responsible for organizing ceremonies. A ceremonial singer possessed and performed songs at rituals and trained assistant singers. The shaman cured illnesses through supernatural powers, controlled natural phenomena, and was the guardian of ceremonies, keeping evil spirits away. The diviner was responsible for finding lost objects, telling future events, and locating game and other food resources. Doctors were usually older women who cured various ailments and illnesses with their knowledge of medicinal herbs. Finally, certain Cahuilla specialized as traders, who ranged as far west as Santa Catalina and as far east as the Gila River (Bean 1978; Kroeber 1976).

Marriages were arranged by parents from opposite moieties. When a child was born, an alliance formed between the families, which included frequent reciprocal exchanges. The Cahuilla kinship system extended to relatives within five generations. Important economic decisions, primarily the distribution of goods, operated within this kinship system (Bean 1978; Kroeber 1976).

Material Culture

Cahuilla houses were dome-shaped or rectangular, thatched structures. The home of the lineage leader was the largest, located near the ceremonial house with the best access to water. Other structures within the village included the men's sweathouse and granaries (Bean 1978; Kroeber 1976).

Cahuilla clothing, like other groups in the area, was minimal. Men typically wore a loincloth and sandals; women wore skirts made from mesquite bark, animal skin, or tules. Babies wore mesquite bark diapers. Rabbit skin cloaks were worn in cold weather (Bean 1978; Kroeber 1976).

Hunting implements included the bow and arrow, throwing sticks, and clubs. Grinding tools used in food processing included manos, metates, and wood mortars. The Cahuilla were known to use long grinding implements made from wood to process mesquite beans; the mortar was typically a hollowed log buried in the ground. Other tools included steatite arrow shaft straighteners (Bean 1978; Kroeber 1976).

Baskets were made from rush, deer grass, and skunkbrush. Different species and leaves were chosen for different colors in the basket design. Coiled-ware baskets were either flat (for plates, trays, or winnowing), bowl-shaped (for food serving), deep, inverted, and cone-shaped (for transporting), or rounded and flat-bottomed for storing utensils and personal items (Bean 1978; Kroeber 1976).

Cahuilla pottery was made from a thin, red-colored ceramic ware that was often painted and incised. Four basic vessel types are known for the Cahuilla: small-mouthed jars, cooking pots, bowls, and dishes. Additionally, smoking pipes and flutes were fashioned from ceramic (Bean 1978; Kroeber 1976).

Gabrielino: An Archaeological and Ethnographic Perspective

The territory of the Gabrielino at the time of Spanish contact covers much of present-day Los Angeles and Orange counties. The southern extent of this culture area is bounded by Aliso Creek, the eastern extent is located east of present-day San Bernardino along the Santa Ana River, the northern extent includes the San Fernando Valley, and the western extent includes portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1976).

Subsistence and Settlement

The Gabrielino lived in permanent villages and occupied smaller resource-gathering camps at various times of the year depending upon the seasonality of the resource. Larger villages were comprised of several families or clans, while smaller, seasonal camps typically housed smaller family units. The coastal area between San Pedro and Topanga Canyon was the location of primary subsistence villages, while secondary sites were located near inland sage stands, oak groves, and pine forests. Permanent villages were located along rivers and streams and in sheltered areas along the coast. As previously mentioned, the Channel Islands were also the locations of relatively large settlements (Bean and Smith 1978; Kroeber 1976).

Resources procured along the coast and on the islands were primarily marine in nature and included tuna, swordfish, ray and shark, California sea lion, Stellar sea lion, harbor seal, northern elephant seal, sea otter, dolphin and porpoise, various waterfowl species, numerous fish species, purple sea urchin, and mollusks, such as rock scallop, California mussel, and limpet. Inland resources included oak acorn, pine nut, Mohave yucca, cacti, sage, grass nut, deer, rabbit, hare, rodent, quail, duck, and a variety of reptiles such as western pond turtle and numerous snake species (Bean and Smith 1978; Kroeber 1976).

Social Organization

Little is known about the social structure of the Gabrielino; however, there appears to have been at least three social classes: 1) the elite, which included the rich, chiefs, and their immediate family; 2) a middle class, which included people of relatively high economic status or long-established lineages; and 3) a class of people that included most other individuals in the society. Villages were politically autonomous units comprised of several lineages. During times of the year when certain seasonal resources were available, the village would divide into lineage groups and move out to exploit them, returning to the village between forays (Bean and Smith 1978; Kroeber 1976).

Each lineage had its own leader, with the village chief coming from the dominant lineage. Several villages might be allied under a paramount chief. Chiefly positions were of an ascribed status, most often passed to the eldest son. Chiefly duties included providing village cohesion, leading warfare and peace negotiations with other groups, collecting tribute from the village(s) under his jurisdiction, and arbitrating disputes within the village(s). The status of the chief was legitimized by his safekeeping of the sacred bundle, a representation of the link between the material and spiritual realms and the embodiment of power (Bean and Smith 1978; Kroeber 1976).

Shamans were leaders in the spirit realm. The duties of the shaman included conducting healing and curing ceremonies, guarding the sacred bundle, locating lost items, identifying and collecting poisons for arrows, and making rain (Bean and Smith 1978; Kroeber 1976).

Marriages were made between individuals of equal social status and, in the case of powerful lineages, marriages were arranged to establish political ties between the lineages (Bean and Smith 1978; Kroeber 1976).

Men conducted the majority of the heavy labor, hunting, fishing, and trading with other groups. Women's duties included gathering and preparing plant and animal resources, and making baskets, pots, and clothing (Bean and Smith 1978; Kroeber 1976).

Material Culture

Gabrielino houses were domed, circular structures made of thatched vegetation. Houses varied in size and could house from one to several families. Sweathouses (semicircular, earth-covered buildings) were public structures used in male social ceremonies. Other structures included menstrual huts and a ceremonial structure called a yuvar, an open-air structure built near the chief's house (Bean and Smith 1978; Kroeber 1976).

Clothing was minimal; men and children most often went naked, while women wore deerskin or bark aprons. In cold weather, deerskin, rabbit fur, or bird skin (with feathers intact) cloaks were worn. Island and coastal groups used sea otter fur for cloaks. In areas of rough terrain, yucca fiber sandals were worn. Women often used red ochre on their faces and skin for adornment or protection from the sun. Adornment items included feathers, fur, shells, and beads (Bean and Smith 1978; Kroeber 1976).

Hunting implements included wood clubs, sinew-backed bows, slings, and throwing clubs.

Maritime implements included rafts, harpoons, spears, hook and line, and nets. A variety of other tools included deer scapulae saws, bone and shell needles, bone awls, scrapers, bone or shell flakers, wedges, stone knives and drills, metates, mullers, manos, shell spoons, bark platters, and wood paddles and bowls. Baskets were made from rush, deer grass, and skunkbush. Baskets were fashioned for hoppers, plates, trays, and winnowers for leaching, straining, and gathering. Baskets were also used for storing, preparing, and serving food, and for keeping personal and ceremonial items (Bean and Smith 1978; Kroeber 1976).

The Gabrielino had exclusive access to soapstone, or steatite, procured from Santa Catalina Island quarries. This highly prized material was used for making pipes, animal carvings, ritual objects, ornaments, and cooking utensils. The Gabrielino profited well from trading steatite since it was valued so much by groups throughout southern California (Bean and Smith 1978; Kroeber 1976).

1.3.6 Ethnohistoric Period (1769 to Present)

Traditionally, the history of the state of California has been divided into three general periods: the Spanish Period (1769 to 1821), the Mexican Period (1822 to 1846), and the American Period (1848 to present) (Caughey 1970). The American Period is often further subdivided into additional phases: the nineteenth century (1848 to 1900), the early twentieth century (1900 to 1950), and the Modern Period (1950 to present). From an archaeological standpoint, all of these phases can be referred to together as the Ethnohistoric Period. This provides a valuable tool for archaeologists, as ethnohistory is directly concerned with the study of indigenous or non-Western peoples from a combined historical/anthropological viewpoint, which employs written documents, oral narrative, material culture, and ethnographic data for analysis.

European exploration along the California coast began in 1542 with the landing of Juan Rodriguez Cabrillo and his men at San Diego Bay. Sixty years after the Cabrillo expeditions, an expedition under Sebastian Viscaíno made an extensive and thorough exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Viscaíno had the most lasting effect upon the nomenclature of the coast. Many of his place names have survived, whereas practically every one of the names created by Cabrillo have faded from use. For instance, Cabrillo named the first (now) United States port he stopped at “San Miguel”; 60 years later, Viscaíno changed it to “San Diego” (Rolle 1969). The early European voyages observed Native Americans living in villages along the coast but did not make any substantial, long-lasting impact. At the time of contact, the Luiseño population was estimated to have ranged from 4,000 to as many as 10,000 individuals (Bean and Shipek 1978; Kroeber 1976).

The historic background of the project area began with the Spanish colonization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). As a result, by the late eighteenth century, a large portion of southern California was overseen by Mission San Luis Rey

(San Diego County), Mission San Juan Capistrano (Orange County), and Mission San Gabriel (Los Angeles County), who began colonization the region and surrounding areas (Chapman 1921).

Up until this time, the only known way to feasibly travel from Sonora to Alta California was by sea. In 1774, Juan Bautista de Anza, an army captain at Tubac, requested and was given permission by the governor of the Mexican State of Sonora to establish an overland route from Sonora to Monterey (Chapman 1921). In doing so, Juan Bautista de Anza passed through Riverside County and described the area in writing for the first time (Caughey 1970; Chapman 1921). In 1797, Father Presidente Lausen (of Mission San Diego de Alcalá), Father Norberto de Santiago, and Corporal Pedro Lisalde (of Mission San Juan Capistrano) led an expedition through southwestern Riverside County in search of a new mission site to establish a presence between San Diego and San Juan Capistrano (Engelhardt 1921). Their efforts ultimately resulted in the establishment of Mission San Luis Rey in Oceanside, California.

Each mission gained power through the support of a large, subjugated Native American workforce. As the missions grew, livestock holdings increased and became increasingly vulnerable to theft. In order to protect their interests, the southern California missions began to expand inland to try and provide additional security (Beattie and Beattie 1939; Caughey 1970). In order to meet their needs, the Spaniards embarked on a formal expedition in 1806 to find potential locations within what is now the San Bernardino Valley. As a result, by 1810, Father Francisco Dumetz of Mission San Gabriel had succeeded in establishing a religious site, or capilla, at a Cahuilla rancheria called Guachama (Beattie and Beattie 1939). San Bernardino Valley received its name from this site, which was dedicated to San Bernardino de Siena by Father Dumetz. The Guachama rancheria was located in present-day Bryn Mawr in San Bernardino County.

These early colonization efforts were followed by the establishment of estancias at Puente (circa 1816) and San Bernardino (circa 1819) near Guachama (Beattie and Beattie 1939). These efforts were soon mirrored by the Spaniards from Mission San Luis Rey, who in turn established a presence in what is now Lake Elsinore, Temecula, and Murrieta (Chapman 1921). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1961). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

Mexico achieved independence from Spain in 1822 and became a federal republic in 1824. As a result, both Baja and Alta California became classified as territories (Rolle 1969). Shortly thereafter, the Mexican Republic sought to grant large tracts of private land to its citizens to begin to encourage immigration to California and to establish its presence in the region. Part of the establishment of power and control included the desecularization of the missions circa 1832. These same missions were also located on some of the most fertile land in California and, as a result, were considered highly valuable. The resulting land grants, known as "ranchos," covered expansive portions of California and by 1846, more than 600 land grants had been issued by the Mexican government. Rancho Jurupa was the first rancho to be established and was issued to Juan

Bandini in 1838. Although Bandini primarily resided in San Diego, Rancho Jurupa was located in what is now Riverside County (Pourade 1963). A review of Riverside County place names quickly illustrates that many of the ranchos in Riverside County lent their names to present-day locations, including Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo (Gunther 1984). As was typical of many ranchos, these were all located in the valley environments within western Riverside County.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off of their land or put to work on the now privately-owned ranchos, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent upon the mission system is evident when, in 1838, a group of Native Americans from Mission San Luis Rey petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

> We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission … We plead and beseech you … to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us. (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely upon prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become upon the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based upon utilizing human resources while integrating them into their society. The Mexican and American ranchers did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

By 1846, tensions between the United States and Mexico had escalated to the point of war (Rolle 1969). In order to reach a peaceful agreement, the Treaty of Guadalupe Hidalgo was put into effect in 1848, which resulted in the annexation of California to the United States. Once California opened to the United States, waves of settlers moved in searching for gold mines, business opportunities, political opportunities, religious freedom, and adventure (Rolle 1969; Caughey 1970). By 1850, California had become a state and was eventually divided into 27 separate counties. While a much larger population was now settling in California, this was primarily in the central valley, San Francisco, and the Gold Rush region of the Sierra Nevada mountain range (Rolle 1969; Caughey 1970). During this time, southern California grew at a much

slower pace than northern California and was still dominated by the cattle industry that was established during the earlier rancho period. However, by 1859, the first United States Post Office in what would eventually become Riverside County was set up at John Magee's store on the Temecula Rancho (Gunther 1984).

During the same decade, circa 1852, the Native Americans of southern Riverside County, including the Luiseño and the Cahuilla, thought they had signed a treaty resulting in their ownership of all lands from Temecula to Aguanga east to the desert, including the San Jacinto Valley and the San Gorgonio Pass. The Temecula Treaty also included food and clothing provisions for the Native Americans. However, Congress never ratified these treaties, and the promise of one large reservation was rescinded (Brigandi 1998).

With the completion of the Southern Pacific Railroad in 1869, southern California saw its first major population expansion. The population boom continued circa 1874 with the completion of connections between the Southern Pacific Railroad in Sacramento to the transcontinental Central Pacific Railroad in Los Angeles (Rolle 1969; Caughey 1970). The population influx brought farmers, land speculators, and prospective developers to the region. As the Jurupa area became more and more populated, circa 1870, Judge John Wesley North and a group of associates founded the city of Riverside on part of the former rancho.

Although the first orange trees were planted in Riverside County circa 1871, it was not until a few years later when a small number of Brazilian navel orange trees were established that the citrus industry truly began in the region (Patterson 1971). The Brazilian navel orange was well suited to the climate of Riverside County and thrived with assistance from several extensive irrigation projects. At the close of 1882, an estimated half a million citrus trees were present in California. It is estimated that nearly half of that population was in Riverside County. Population growth and 1880s tax revenue from the booming citrus industry prompted the official formation of Riverside County in 1893 out of portions of what was once San Bernardino and San Diego counties (Patterson 1971).

Shortly thereafter, with the start of World War I, the United States began to develop a military presence in Riverside County with the construction of March Air Reserve Base. During World War II, Camp Haan and Camp Anza were constructed in what is now the current location of the National Veteran's Cemetery. In the decades that followed, populations spread throughout the county into Lake Elsinore, Corona, Norco, Murrieta, and Wildomar. However, a significant portion of the county remained largely agricultural well into the 1970s. Following the 1970s, Riverside saw a period of dramatic population increase as the result of new development, more than doubling the population of the county with a population of over 1.3 million residents (Patterson 1971).

Historical Review of the City of Menifee

A research effort was initiated in order to characterize the circumstances of the early development in the Perris and Menifee valleys to create a historical and cultural framework for

discussion. Generally speaking, the Perris and Menifee valleys are both parts of the geologic valley system known as the Perris Plain, a broad, nearly flat valley surface dotted with bedrock hills that extend from the Hemet area on the north to Corona on the south. The historical development of this area was strongly influenced by the geography of the Perris Plain, especially the lack of surface water and soil conditions.

The Cypress Sands Project is located between the cities of Perris and Temecula, both of which played a pivotal role in the development of the Perris Valley. Settlement in the area began with mining and homesteading in the 1880s. In the early 1880s, a 20-year-old prospector from Kentucky named Menifee Wilson (California State Library 1896) discovered and claimed a gold-bearing quartz mine about eight miles south of Perris (Gunther 1984). Wilson named his claim the Menifee Quartz Lode. This gold discovery resulted in an influx of miners to the area, which became known as Menifee or Menifee Valley. Additional claims were laid out by other prospectors and the area became formally designated the Menifee (Auld) Mining District (Clark 1970), which encompasses most of the granite formation on the south side of the Menifee Valley. Wilson became a successful local miner and the district produced commercial quantities of gold from a number of mines. One of Wilson's mines, the King Wilson Mine, was purchased and renamed the Alice Mine. The Alice Mine was eventually enlarged to include a stamp mill that produced substantial quantities of ore (Irelan 1891).

The discovery of gold, however, had a significant effect upon increased interest and population movements into the Menifee and Perris valleys. In addition to mining, several farms were established in the valley areas to take advantage of the farming and ranching potential. As a consequence of the increased population associated with the agricultural development of the Menifee Valley, the need arose for a post office and school. Although an actual town site named "Menifee" never existed, the post office and school became community landmarks. The Menifee Post Office was established on May 18, 1887, with Darius W. Godfrey as the first postmaster (Salley 1977). It appears that the post office was situated in a small store adjacent to the schoolhouse, both of which were situated near the present-day intersection of Newport and Bradley roads, approximately four miles southwest of the Menifee Railroad siding. The post office was discontinued on November 30, 1896, reestablished on April 4, 1900, and permanently discontinued on July 10, 1900. After that time, the mail was routed to Perris.

The Menifee School District was formed in 1890. William W. Snoddy, the patentee of 160 acres in the valley on January 25, 1888 (San Diego County Patent Book 6, page 83), gave an acre and a half for a school site on March 31, 1890 (San Diego County Deed Book 167, page 71). As noted previously, the school site was located at the intersection of Newport and Bradley roads. The school served the local farming community and was incorporated into the county school system on April 4, 1893. A description of Menifee printed in June 1893 described the area as "a post office in the center of a very large hay and grain growing community. There is a fine, large school here … The Southern Methodists have a church and organization, Rev. A. Adkisson, pastor" (Gunther 1984). Subsequent research into land patents at the Bureau of Land Management

General Land Office resulted in a finding that no town site had been patented at this location. This means that aside from the school building, the land at that location was probably privately owned.

When Riverside County was being formed from part of San Diego County, the *Riverside Daily Press* sent out a reporter to take stock of the new county. The resultant report dated March 3, 1893 described Menifee as:

> [E]xclusively a grain growing section. There is no village. Up to about three weeks ago there was a store, but that burned and has not been rebuilt. The post office is now being kept in a little shanty. There is a fine school house near where the store stood. There are few houses except at the old mines. The ranch houses, which are widely scattered, are nearly all fine looking buildings and denote general prosperity in this section. (Gunther 1984)

The historical record suggests that grain and hay farming alone could not sustain a small farm (160 acres or less) in the Menifee and Perris valleys. Many farmers utilized a combination of land lease, rent, and purchase to expand the amount of cropland they could control. It was also common to supplement the family resources with work outside the farm. Temporary labor positions made up for the shortfall for some early pioneers, including working at the granite quarries in Temecula, hiring out to larger farms or ranches during harvest, and a variety of other sources of income (Brigandi 1998). For others, the role of absentee landlord succeeded in the acquisition of a land patent and collecting some rents while fulfilling the settlement and improvement requirements of the patent. Although this might not have followed the strict interpretation of patent conditions, it could have been accomplished with little effort.

Each citizen-owned farm needed to be self-supporting for both practical and economic reasons (Cook 1944; Robinson 1948; Cook and Phipps 1952; Lascelles 1951). The corner grocery store was not available to these farmers. Moreover, farm economics dictated self-sufficiency as being key to annual profits. Repairs and modifications to metal farm equipment were done by blacksmithing until well into the second half of the twentieth century. If a need arose for a piece of farm equipment, every effort was expended to create one from the materials at hand. If a need arose for a structure for a particular function, lumber was taken from a stockpile of used material or from another structure that had outlived its usefulness. Hired hands were limited and only employed if there were no children or other dependent family members to do the work. Living in town and working for pay then coming to the farm on weekends was not unusual.

Growing winter wheat and alfalfa hay is not as labor-intensive as, for example, dairy farming. Hay and grain farming primarily include plowing and sowing seed, then harvesting when the crop is mature. The balance of time is spent keeping machinery in order, mending fences, dealing with pests, and maintaining farm buildings. Employment for wages would have taken up a substantial amount of a farmer's time. Cottage industries, however, must not be overlooked. Home crafts such as sewing, dairy products, and other activities would have brought additional

funds to the family coffer. Barter was also used as a method of acquiring necessities and even a few luxury items. While the foregoing may paint a picture of harsh conditions on the farm, most farmers chose that life for the solitude and found it fulfilling.

According to Bob Hewitt (personal communication, 2001), the district conservationist at the Natural Resources Conservation Service in San Jacinto, hay and grain have remained staple crops since the 1870s or 1880s until recent housing development reduced the amount of farmland. The reason for this is that there has never been much water in the Menifee or Perris valleys, and the soil is rather poor. Attempts were made to grow other crops and personal vegetable gardens were also part of farm life; however, large-scale irrigation has not been successful in the long term because the water table in Menifee Valley was easily depleted. Overall, hay and grain were the primary crops and rainfall was the primary form of irrigation.

After Colorado River water came to Menifee Valley, potatoes became a significant crop for market (Gunther 1984; Hanson and Jennings 1991). According to Greg Cowdery from the Winchester Historical Society at the Patterson House Museum (personal communication, 2002), alfalfa hay, winter wheat, and barley were staples in the valley prior to the inception of irrigation.

1.4 Results of the Archaeological Records Search

An archaeological records search for the project and the surrounding area within a one-mile radius was requested from the EIC at UCR on July 8, 2022 (Appendix B). However, due to the limitations imposed by the evolving circumstances related to the COVID-19 pandemic, records search access has become limited, and the results are delayed for the foreseeable future. Therefore, BFSA reviewed in-house data for a preliminary review. The currently available information did not show any recorded resources within the project. However, this data does indicate historic, prehistoric, and multicomponent sites are located within one mile of the project. Many of the prehistoric sites are associated with the bedrock-laden foothills to the east and southeast. Once the current records search data is received from the EIC, an updated report will be provided to the City of Menifee.

BFSA reviewed the following sources to help facilitate a better understanding of the historic use of the property:

- The National Register of Historic Places index
- Historic USGS data
- Historic aerial photographs (1967, 1978, 1996, 2002, and 2005)

These sources did not indicate the presence of any additional archaeological resources within the project. Aerial photographs show that the property has been vacant since at least the late 1960s. For background research, however, the absence of positive results does not necessarily indicate the absence of historic resources. When available, the EIC records search may still indicate the presence of recorded sites within or in the vicinity of the project.

BFSA also requested a SLF search from the NAHC to search for the presence of sacred sites or locations of religious or ceremonial importance within the search radius. As of the date of this report, however, no response has been received. All correspondence is provided in Appendix C.

1.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, the criteria outlined in CEQA, provide the guidance for making such a determination. The following sections detail the criteria that a resource must meet in order to be determined important.

1.5.1 California Environmental Quality Act

According to CEQA (§15064.5a), the term "historical resource" includes the following:

1) A resource listed in or determined to be eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (CRHR) (Public Resources Code SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Public Resources Code SS5024.1, Title 14, Section 4852) including the following:

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

d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in, or determined eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code Section 5020.1(j) or 5024.1.

According to CEQA (§15064.5b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. CEQA defines a substantial adverse change as:

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:

   a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in the CRHR; or
   b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,
   c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or Environmental Impact Report, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5(d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

(d) When an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the NAHC. Action implementing such an agreement is exempt from:

    1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5).
    2) The requirements of CEQA and the Coastal Act.

2.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in the determination of resource significance. For the current project, the study area under investigation is west-central Riverside County. The scope of work for the cultural resources study conducted for the Cypress Sands Project included the survey of an approximately nine-acre area. Given the area involved, the research design for this project was focused upon realistic study options. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration a variety of characteristics, as well as the ability of a resource to address regional research topics and issues.

Although elementary resource evaluation programs are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project discussed above.

Research Questions:

- Can located cultural resources be associated with a specific time period, population, or individual?
- Do the types of any located cultural resources allow a site activity/function to be determined from a preliminary investigation? What are the site activities? What is the site function? What resources were exploited?
- How do located sites compare to others reported from different surveys conducted in the area?
- How do located sites fit existing models of settlement and subsistence for valley environments of the region?

Data Needs

At the survey level, the principal research objective is a generalized investigation of changing settlement patterns in both the prehistoric and historic periods within the study area. The overall goal is to understand settlement and resource procurement patterns of the project area occupants. Therefore, adequate information on site function, context, and chronology from an archaeological perspective is essential for the investigation. The fieldwork and archival research were undertaken with the following primary research goals in mind:

1) To identify cultural resources occurring within the project;
2) To determine, if possible, site type and function, context of the resource(s), and chronological placement of each cultural resource identified;
3) To place each cultural resource identified within a regional perspective; and
4) To provide recommendations for the treatment of each cultural resources identified.

3.0 ANALYSIS OF PROJECT EFFECTS

The cultural resources study of the project consisted of an institutional records search, an intensive cultural resource survey of the entire approximately nine-acre project, and the preparation of this technical report. In compliance with the City of Menifee, as the lead agency, this study was conducted in conformance with CEQA environmental guidelines and Section 21083.2 of the California Public Resources Code. Specific definitions for archaeological resource type(s) used in this report are those established by the State Historic Preservation Office (SHPO 1995).

3.1 Survey Methods

The survey methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. The field methodology employed for the project included walking evenly spaced survey transects set approximately 10 meters apart while visually inspecting the ground surface. All potentially sensitive areas where cultural resources might be located were closely inspected. Photographs documenting survey areas and overall survey conditions were taken frequently.

3.2 Results of the Field Survey

The cultural resources survey took place on July 1, 2022, and was conducted by Director of Field Operations Clarence Hoff. The survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately 10-meter intervals, oriented east to west, which covered all areas of the project. The entire property was accessible and consisted primarily of a vacant plowed parcel. At the time of the survey, the property appeared to have been cleared of most vegetation and ground visibility was good (Plates 3.2–1 and 3.2–2). The soil within the project primarily consists of sandy loam devoid of any notably sized cobbles or rocks and no bedrock outcroppings, which tend to be associated with prehistoric sites in the area, are located within the subject property.

During the survey it was noted that both Chambers Avenue and Antelope Road along the northern and eastern boundaries respectively, had been paved and improved. Further, a recently constructed culvert was noted within the northeastern corner of the property which directs water under Antelope Road (Plate 3.2–3). The road and culvert improvements are all recent as they appear on Google Earth Imagery between 2019 and 2021. The survey did not result in the identification of any cultural resources. No historic or prehistoric resources were observed during the survey.



Plate 3.2–1: Overview of the property from the southwest corner, facing northeast. Note the recently disced fields and lack of vegetation.



Plate 3.2–2: Overview of the property from southeast corner, facing northwest.



Plate 3.2–3: Overview of a recently constructed culvert, facing northeast.

4.0 RECOMMENDATIONS

The Phase I archaeological assessment for the Cypress Sands Project did not identify any cultural resources within the property. The archaeological study was completed in accordance with the City of Menifee environmental guidelines. Given that no archaeological sites, features, or artifacts were identified during the survey, no potential impacts to cultural resources are anticipated with the approval of the proposed development. Prehistoric resources in the vicinity of the project tend to be located within the bedrock-laden foothills to the east and southeast and tied to the use of the natual bedrock outcroppings. A review of the subject property found that it does not contain any bedrock outrcoppings and has been repeatidly cleared and used for agriculture. Therefore, as a result of previous ground-disturbing activities associated with previous agricultural disturbance of the property, there is minimal potential for archaeological resources to be present or disturbed by the proposed project.

Based upon the results of the field survey, no further archaeological study is recommended and no site-specific mitigation measures for cultural resources are recommended as a condition of project approval. However, in the event that any historic or prehistoric cultural resources are inadvertently discovered, all construction work in the immediate vicinity of the discovery shall stop and a qualified archaeologist shall be engaged to discuss the discovery and determine if further mitigation measures are warranted. Should human remains be discovered, treatment of these remains shall follow California Public Resources Code 5097.9. Any human remains that are determined to be Native American shall be reported to the Riverside County sheriff-coroner and subsequently to the NAHC.

5.0 LIST OF PREPARERS AND ORGANIZATIONS CONTACTED

The archaeological survey program for the Cypress Sands Project was conducted by Director of Field Operations Clarence Hoff. The report text was prepared by Andrew Garrison and Brian Smith. Report graphics were provided by Andrew Garrison. Technical editing and report production were conducted by Jacob Tidwell. The archaeological records search was requested from the EIC at UCR and compiled by Andrew Garrison.

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APPENDIX A

Resumes of Key Personnel

Brian F. Smith, MA

Owner, Principal Investigator

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California **1982**

Bachelor of Arts, History, and Anthropology, University of San Diego, California **1975**

Professional Memberships

Society for California Archaeology

Experience

Principal Investigator **1977–Present**
Brian F. Smith and Associates, Inc. **Poway, California**

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. Over the past 32 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Mr. Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Corps of Engineers, the Bureau of Land Management, the Bureau of Reclamation, the Department of Defense, and the Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts that have added significantly to the body of knowledge concerning the prehistoric life ways of cultures once present in the southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large numbers of downtown San Diego mitigation and monitoring projects, some of which included Broadway Block (2019), 915 Grape Street (2019), 1919 Pacific Highway (2018), Moxy Hotel (2018), Makers Quarter Block D (2017), Ballpark Village (2017), 460 16th Street (2017), Kettner and Ash (2017), Bayside Fire Station (2017), Pinnacle on the Park (2017), IDEA1 (2016), Blue Sky San Diego (2016), Pacific Gate (2016), Pendry Hotel (2015), Cisterra Sempra Office Tower (2014), 15th and Island (2014), Park and G (2014), Comm 22 (2014), 7th and F Street Parking (2013), Ariel Suites (2013), 13th and Marker (2012), Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft

Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

1900 and 1912 Spindrift Drive: An extensive data recovery and mitigation monitoring program at the Spindrift Site, an important prehistoric archaeological habitation site stretching across the La Jolla area. The project resulted in the discovery of over 20,000 artifacts and nearly 100,000 grams of bulk faunal remains and marine shell, indicating a substantial occupation area (2013-2014).

San Diego Airport Development Project: An extensive historic assessment of multiple buildings at the San Diego International Airport and included the preparation of Historic American Buildings Survey documentation to preserve significant elements of the airport prior to demolition (2017-2018).

Citracado Parkway Extension: A still-ongoing project in the city of Escondido to mitigate impacts to an important archaeological occupation site. Various archaeological studies have been conducted by BFSA resulting in the identification of a significant cultural deposit within the project area.

Westin Hotel and Timeshare (Grand Pacific Resorts): Data recovery and mitigation monitoring program in the city of Carlsbad consisted of the excavation of 176 one-square-meter archaeological data recovery units which produced thousands of prehistoric artifacts and ecofacts, and resulted in the preservation of a significant prehistoric habitation site. The artifacts recovered from the site presented important new data about the prehistory of the region and Native American occupation in the area (2017).

The Everly Subdivision Project: Data recovery and mitigation monitoring program in the city of El Cajon resulted in the identification of a significant prehistoric occupation site from both the Late Prehistoric and Archaic Periods, as well as producing historic artifacts that correspond to the use of the property since 1886. The project produced an unprecedented quantity of artifacts in comparison to the area encompassed by the site, but lacked characteristics that typically reflect intense occupation, indicating that the site was used intensively for food processing (2014-2015).

Ballpark Village: A mitigation and monitoring program within three city blocks in the East Village area of San Diego resulting in the discovery of a significant historic deposit. Nearly 5,000 historic artifacts and over 500,000 grams of bulk historic building fragments, food waste, and other materials representing an occupation period between 1880 and 1917 were recovered (2015-2017).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven-block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark Project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade (2000-2007).

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, containing primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the city of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the city of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs documenting this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the city and county of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the city. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the city showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Mid-Bayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the city. The study included the analysis of some potentially historic features and numerous prehistoric

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Audie Murphy Ranch, Riverside County, California: Project manager/director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February- September 2002.

Cultural Resources Evaluation of Sites Within the Proposed Development of the Otay Ranch Village 13 Project, San Diego County, California: Project manager/director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural Resources Survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project manager/director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee West GPA, Riverside County, California: Project manager/director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites

for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Cultural Resources Survey and Test of Sites Within the Proposed French Valley Specific Plan/EIR, Riverside County, California: Project manager/director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee Ranch, Riverside County, California: Project manager/director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage Mitigation of a Portion of the San Diego Presidio Identified During Water Pipe Construction for the City of San Diego, California: Project archaeologist/director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project, Pacific Beach, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage Mitigation of a Portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and Testing of Two Prehistoric Cultural Resources for the Airway Truck Parking Project, Otay Mesa, California: Project archaeologist/director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural Resources Phase I and II Investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Westview High School Project for the City of San Diego, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project archaeologist/director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of Grading for the Herschel Place Project, La Jolla, California: Project archaeologist/ monitor—included monitoring of grading activities associated with the development of a single- dwelling parcel. September 1999.

Survey and Testing of a Historic Resource for the Osterkamp Development Project, Valley Center, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Testing of a Prehistoric Cultural Resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project manager/director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and Evaluation of Cultural Resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Evaluation of Cultural Resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project manager/director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural Resources Phase I, II, and III Investigations for the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997- January 2000.

Phase I, II, and II Investigations for the Scripps Poway Parkway East Project, Poway California: Project archaeologist/project director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Andrew J. Garrison, MA, RPA

Project Archaeologist

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: agarrison@bfsa-ca.com

Education

Master of Arts, Public History, University of California, Riverside **2009**

Bachelor of Science, Anthropology, University of California, Riverside **2005**

Bachelor of Arts, History, University of California, Riverside **2005**

Professional Memberships

Register of Professional Archaeologists
Society for California Archaeology
Society for American Archaeology
California Council for the Promotion of History
Society of Primitive Technology
Lithic Studies Society
California Preservation Foundation
Pacific Coast Archaeological Society

Experience

Project Archaeologist **June 2017–Present**
Brian F. Smith and Associates, Inc. **Poway, California**

Project management of all phases of archaeological investigations for local, state, and federal agencies including National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) level projects interacting with clients, sub-consultants, and lead agencies. Supervise and perform fieldwork including archaeological survey, monitoring, site testing, comprehensive site records checks, and historic building assessments. Perform and oversee technological analysis of prehistoric lithic assemblages. Author or co-author cultural resource management reports submitted to private clients and lead agencies.

Senior Archaeologist and GIS Specialist **2009–2017**
Scientific Resource Surveys, Inc. **Orange, California**

Served as Project Archaeologist or Principal Investigator on multiple projects, including archaeological monitoring, cultural resource surveys, test excavations, and historic building assessments. Directed projects from start to finish, including budget and personnel hours proposals, field and laboratory direction, report writing, technical editing, Native American consultation, and final report submittal. Oversaw all GIS projects including data collection, spatial analysis, and map creation.

Preservation Researcher **2009**
City of Riverside Modernism Survey **Riverside, California**

Completed DPR Primary, District, and Building, Structure and Object Forms for five sites for a grant-funded project to survey designated modern architectural resources within the City of Riverside.

Information Officer **2005, 2008–2009**
Eastern Information Center (EIC), University of California, Riverside **Riverside, California**

Processed and catalogued restricted and unrestricted archaeological and historical site record forms. Conducted research projects and records searches for government agencies and private cultural resource firms.

Reports/Papers

2019 A Class III Archaeological Study for the Tuscany Valley (TM 33725) Project National Historic Preservation Act Section 106 Compliance, Lake Elsinore, Riverside County, California. Contributing author. Brian F. Smith and Associates, Inc.

2019 A Phase I and II Cultural Resources Assessment for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California. Brian F. Smith and Associates, Inc.

2019 A Phase I Cultural Resources Assessment for the 10575 Foothill Boulevard Project, Rancho Cucamonga, California. Brian F. Smith and Associates, Inc.

2019 Cultural Resources Study for the County Road and East End Avenue Project, City of Chino, San Bernardino County, California. Brian F. Smith and Associates, Inc.

2019 Phase II Cultural Resource Study for the McElwain Project, City of Murrieta, California. Contributing author. Brian F. Smith and Associates, Inc.

2019 A Section 106 (NHPA) Historic Resources Study for the McElwain Project, City of Murrieta, Riverside County, California. Brian F. Smith and Associates, Inc.

2018 Cultural Resource Monitoring Report for the Sewer Group 818 Project, City of San Diego. Brian F. Smith and Associates, Inc.

2018 Phase I Cultural Resource Survey for the Stone Residence Project, 1525 Buckingham Drive, La Jolla, California 92037. Brian F. Smith and Associates, Inc.

2018 A Phase I Cultural Resources Assessment for the Seaton Commerce Center Project, Riverside County, California. Brian F. Smith and Associates, Inc.

2017 A Phase I Cultural Resources Assessment for the Marbella Villa Project, City of Desert Hot Springs, Riverside County, California. Brian F. Smith and Associates, Inc.

2017 Phase I Cultural Resources Survey for TTM 37109, City of Jurupa Valley, County of Riverside. Brian F. Smith and Associates, Inc.

2017 A Phase I Cultural Resources Assessment for the Winchester Dollar General Store Project, Riverside County, California. Brian F. Smith and Associates, Inc.

2016 John Wayne Airport Jet Fuel Pipeline and Tank Farm Archaeological Monitoring Plan. Scientific Resource Surveys, Inc. On file at the County of Orange, California.

2016 Historic Resource Assessment for 220 South Batavia Street, Orange, CA 92868 Assessor's Parcel Number 041-064-4. Scientific Resource Surveys, Inc. Submitted to the City of Orange as part of

Mills Act application.

2015 Historic Resource Report: 807-813 Harvard Boulevard, Los Angeles. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

2015 Exploring a Traditional Rock Cairn: Test Excavation at CA-SDI-13/RBLI-26: The Rincon Indian Reservation, San Diego County, California. Scientific Resource Surveys, Inc.

2014 Archaeological Monitoring Results: The New Los Angeles Federal Courthouse. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

2012 Bolsa Chica Archaeological Project Volume 7, Technological Analysis of Stone Tools, Lithic Technology at Bolsa Chica: Reduction Maintenance and Experimentation. Scientific Resource Surveys, Inc.

Presentations

2017 "Repair and Replace: Lithic Production Behavior as Indicated by the Debitage Assemblage from CA-MRP-283 the Hackney Site." Presented at the Society for California Archaeology Annual Meeting, Fish Camp, California.

2016 "Bones, Stones, and Shell at Bolsa Chica: A Ceremonial Relationship?" Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Markers of Time: Exploring Transitions in the Bolsa Chica Assemblage." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Dating Duress: Understanding Prehistoric Climate Change at Bolsa Chica." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2014 "New Discoveries from an Old Collection: Comparing Recently Identified OGR Beads to Those Previously Analyzed from the Encino Village Site." Presented at the Society for California Archaeology Annual Meeting, Visalia, California.

2012 Bolsa Chica Archaeology: Part Seven: Culture and Chronology. Lithic demonstration of experimental manufacturing techniques at the April meeting of The Pacific Coast Archaeological Society, Irvine, California.

APPENDIX B

Archaeological Records Search

(Deleted for Public Review; Bound Separately)

APPENDIX C

NAHC Sacred Lands File Search Results

(Deleted for Public Review; Bound Separately)

Appendix D

Paleontological Resources Assessment

PALEONTOLOGICAL ASSESSMENT FOR THE CYPRESS SANDS PROJECT

MENIFEE
RIVERSIDE COUNTY, CALIFORNIA

APN 333-050-034

Prepared for:

Empire Construction Management
2280 Wardlow Circle, Suite 250
Corona, California 92878

Submitted to:

City of Menifee
29844 Haun Road
Menifee, California 92586

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064

July 20, 2022

Paleontological Database Information

Author:	Todd A. Wirths, M.S., Senior Paleontologist, California Professional Geologist No. 7588
Consulting Firm:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064 (858) 679-8218
Report Date:	July 20, 2022
Report Title:	Paleontological Assessment for the Cypress Sands Project, Menifee, Riverside County, California
Prepared for:	Empire Construction Management 2280 Wardlow Circle, Suite 250 Corona, California 92878
Submitted to:	City of Menifee 29844 Haun Road Menifee, California 92586
Prepared by:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064
USGS Quadrangle:	Section 22, Township 5 South, Range 3 West of the USGS (7.5-minute) *Romoland*, *California* Quadrangle
Study Area:	Approximately nine acres
Assessor's Parcel Number:	333-050-034
Key Words:	Paleontological assessment; Pleistocene very old alluvial fan deposits; mammalian fossil bones; full-time monitoring below five feet; City of Menifee.

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I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the Cypress Sands Project, located northwest of the intersection of Tioga Lane and Antelope Road in the city of Menifee in Riverside County, California (Figures 1 and 2). On the U.S. Geological Survey (7.5-minute), 1:24,000-scale *Romoland*, *California* topographic quadrangle map, the project is situated in Section 22, Township 5 South, Range 3 West, of the San Bernardino Baseline and Meridian (Figure 2). The project consists of one parcel (Assessor's Parcel Number [APN] 333-050-034) totaling approximately nine acres. An apartment complex consisting of seven buildings is planned for the project, along with associated parking, infrastructure, and a stormwater detention basin.

As the lead agency, the City of Menifee has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records in the area; a review of the underlying geology; and recommendations to mitigate impacts to potential paleontological resources, if necessary.

II. REGULATORY SETTING

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental regulation that sets the requirement for protecting California's paleontological resources. CEQA mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

State of California

Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15063 of the CCR provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.

In CEQA's Environmental Checklist Form, one of the questions to answer is, "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section 5097.5, the law by which protects nonrenewable resources including fossils, which is paraphrased below:

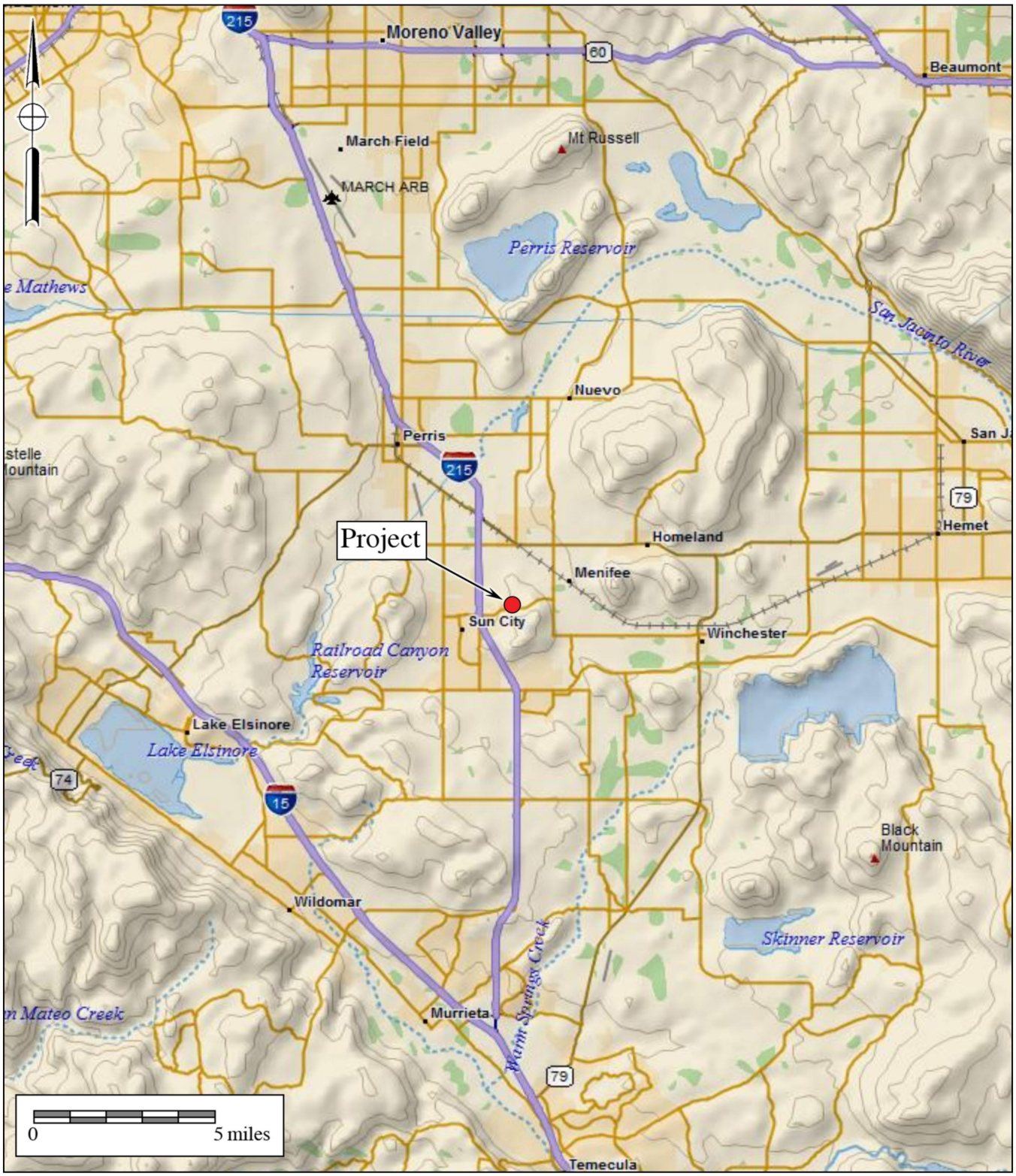


Figure 1

General Location Map

The Cypress Sands Project

DeLorme (1:250,000)

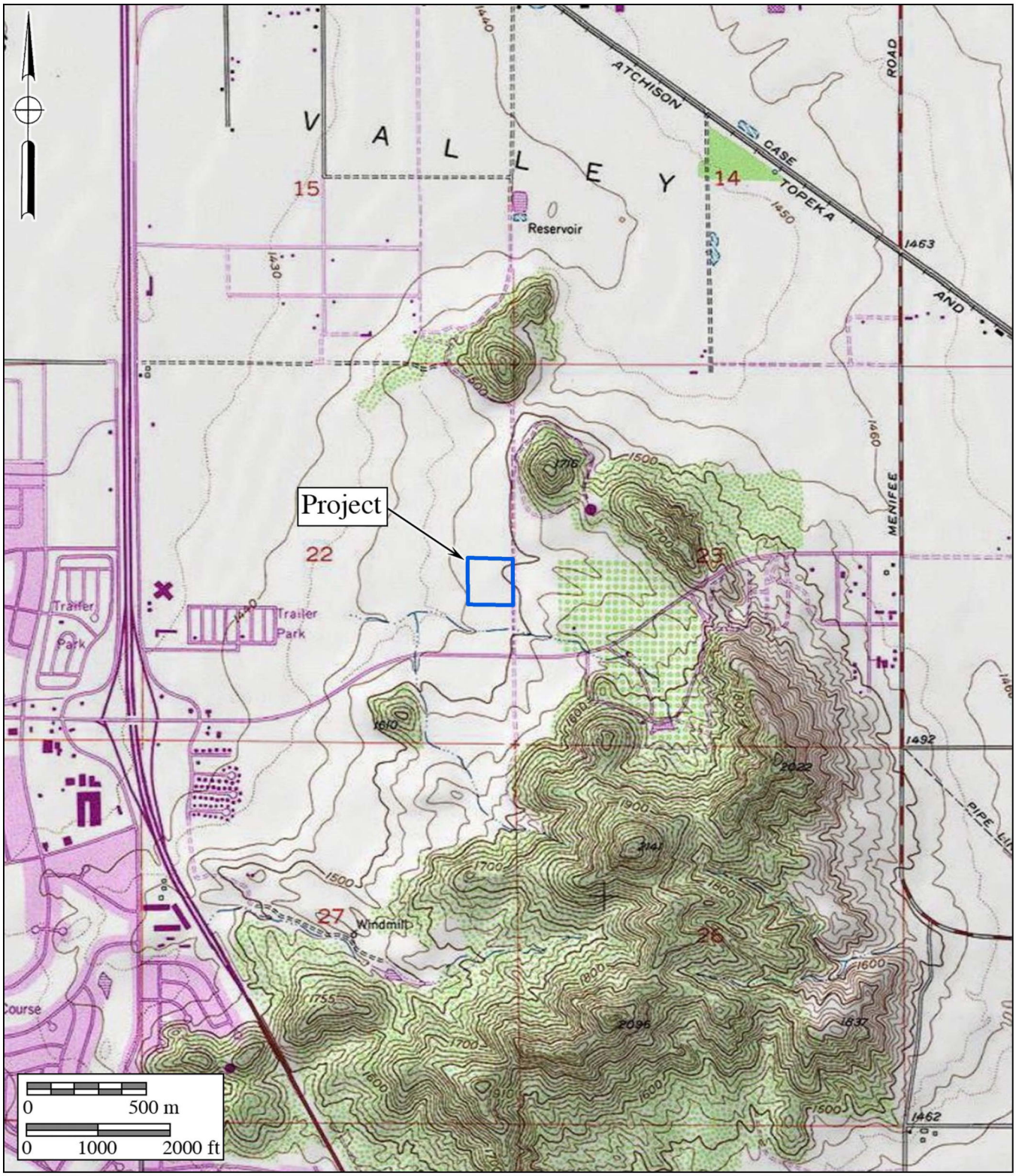


Figure 2

Project Location Map

The Cypress Sands Project

USGS *Romoland* Quadrangle (7.5-minute series)

a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.
b) As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
c) A violation of this section is a misdemeanor.

City of Menifee

The City of Menifee has allocated guidelines addressing paleontological resources in the Open Space and Conservation Element (Exhibit OSC-4) of the City's General Plan (City of Menifee 2013). Exhibit OSC-4 identifies the level of paleontological resource sensitivity of the mapped geologic formations within the city limits and their potential to yield nonrenewable paleontological resources (fossils). However, the exhibit does not provide any specific guidance or other definitions, such as monitoring depth thresholds.

III. GEOLOGY

Regionally, the project lies within the central part of the Perris Block, a structural block bounded on the west by the Elsinore fault zone and on the east by the San Jacinto fault zone. The hills surrounding the region consist of eroded masses of exhumed Cretaceous and older crystalline and metamorphic rocks separated by flat valleys filled with geologically young sediments. The project is located on middle to early Pleistocene (approximately 0.5 to 1.8 million years old) very old alluvial fan sediments, consisting of well-dissected, well-indurated, reddish-brown alluvial fan deposits of sand and gravel (areas colored brown and labeled "$Qvof_{ag}$" on Figures 3A and 3B, after Morton 2003).

Ancient soil zones (paleosols) developed within Pleistocene sedimentary deposits are not uncommon in the Menifee and Perris areas, and are characterized in these areas by a reddish coloration at a certain interval(s) below the surface. Stewart et al. (2012) and Raum et al. (2014) report on occurrences of paleosols in Riverside County yielding Pleistocene vertebrate fossils. Instances of fossiliferous paleosols have also recently been documented in Kern County (Stewart and Hakel 2019) and San Bernardino County (Stewart and Hakel 2016, 2017). Fossils yielded by Pleistocene paleosols are covered in Section V of this report.

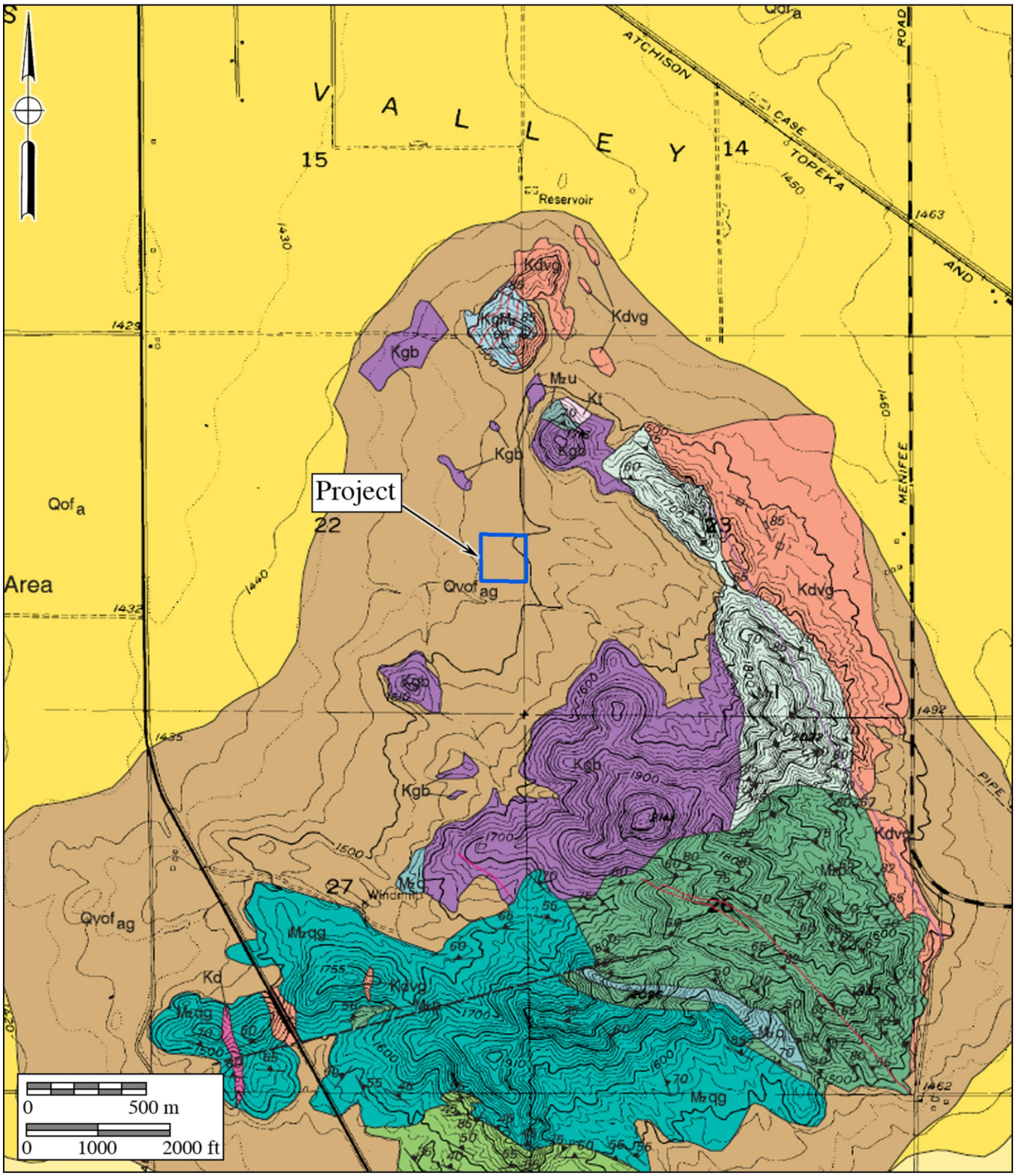


Figure 3A

Geologic Map

The Cypress Sands Project

Geology after Morton (2003)

Late to middle Pleistocene

Qof — **Old alluvial-fan deposits (late to middle Pleistocene)**—Indurated, sandy alluvial-fan deposits. Covers extensive area surrounding western Lakeview Mountains; commonly at base of steep bedrock slopes. Most of unit is slightly to moderately dissected and reddish-brown. Some Qof includes thin, discontinuous surface layer of Holocene alluvial fan material

Middle to early Pleistocene

Qvof — **Very old alluvial fan deposits (middle to early Pleistocene)**—Mostly well-dissected, well-indurated, reddish-brown alluvial fan deposits. Grain size chiefly sand and gravel

Cretaceous crystalline rocks

Kd — **Diorite, undifferentiated (Cretaceous)**—Mostly fine-to medium-grained, massive, dark gray to near black hornblende diorite.

Kdvg — **Granodiorite to tonalite**—Relatively uniform, massive hornblende biotite granodiorite grading into tonalite. Principal rock type of Domenigoni Valley pluton. Contains some mafic rich rocks in southern part of pluton. Common accessory minerals are zircon, sphene, apatite, and magnetite-ilmenite. Minute rutile crystals impart bluish opalescence to quartz. Small masses of epidote and (or) tourmaline rock occur locally and appear to replace granodiorite to tonalite. Contains moderately abundant to abundant equant mafic inclusions. Zircon age is 117.8 Ma_{id} and 112.8 Ma_{ip} (pers comm W. Premo) and $^{40}Ar/^{39}Ar$ age of 104 Ma for biotite and 95.5 Ma for potassium feldspar (pers comm L. Snee)

Kgb — **Gabbro (Cretaceous)**—Mainly hornblende gabbro. Includes Virginia quartz-norite and gabbro of Dudley (1935), and San Marcos gabbro of Larsen (1948). Typically brown-weathering, medium-to very coarse-grained hornblende gabbro; very large poikilitic hornblende crystals are common, and very locally gabbro is pegmatitic. Much is quite heterogeneous in composition and texture. Includes noritic and dioritic composition rocks

Kt — **Tonalite, undifferentiated (Cretaceous)**—Gray, medium-grained biotite-hornblende tonalite, typically foliated. Forms medium to small bodies throughout quadrangle

Mesozoic metamorphic rocks

KgMz — **Intermixed Mesozoic schist and Cretaceous granitic rocks (Mesozoic)**—Wide variety of Mesozoic schist and related metamorphic rocks mixed with granitic rocks ranging in composition from monzogranite to quartz diorite. Most granitic rocks are tonalite composition. Restricted to small hill 2 km south of Romoland

Mzu — **Metasedimentary rocks, undifferentiated (Mesozoic)**—Wide variety of low- to high-metamorphic grade metasedimentary rocks. Most occurrences include substantial biotite schist

Mzi — **Interlayered phyllite (or schist) and quartzite (Mesozoic)**—Interlayered, relatively pure quartzite and phyllite

Mzqg — **Intermixed quartzite and graywacke (Mesozoic)**—Intermixed quartzite and lithic metagraywacke; quartzite may or may not be feldspathic

Mzq — **Quartz-rich rocks (Mesozoic)**—Quartzite and quartz-rich metasandstone

Figure 3B

Geologic Map Key

The Cypress Sands Project

Geology after Morton (2003)

IV. PALEONTOLOGICAL RESOURCES

Definition

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a nonrenewable resource under state and local guidelines (Section II of this report).

Fossil Locality Search

A prior paleontological literature review and collections and records search was conducted for the nearby TR 36430-2 Mountain Gate Project by the Western Science Center (WSC) (Radford 2021, attached). The TR 36430-2 Mountain Gate Project is located approximately two miles east of the current project. The records search found that the nearest known fossil locality is located approximately two miles to the southeast of the current project near Simpson Road. This locality is associated with abundant localities connected to the Diamond Valley Lake Reservoir Project, located three to four miles southeast of the proposed project, as well as from the reservoir itself, consisting of hundreds of specimens of Pleistocene mammal bones (Radford 2021). Construction associated with the Diamond Valley Lake Reservoir yielded vast numbers of terrestrial Ice Age vertebrate fossils (*e.g.*, Anderson et al. 2002; Springer et al. 1999, 2009) that are now housed at the Western Science Center. These fossils were derived from the same types of alluvial fan deposits as mapped within the current project.

An older paleontological literature review and collections and records search was conducted for the City of Menifee General Plan in 2010 (Scott 2010, attached). The report identified 22 fossil localities in the northeast part of Menifee and one additional locality on the east side of the city. The fossils included the remains of an extinct camel, as well as those of small mammals such as rabbits, rodents, and lizards. These localities are located less than two miles northeast of the Cypress Sands Project. Based on the numerous previously recorded vertebrate fossil localities from Pleistocene alluvial and alluvial fan deposits across western Riverside County (*e.g.,* Jefferson 1991), the San Bernardino County Museum (SBCM) and the WSC both regard Quaternary old alluvial fan sediments as having a high potential to contain significant paleontological resources and therefore would recommend that a program be implemented to "mitigate impacts to [potential] nonrenewable paleontological resources" (Scott 2010).

Field Survey

Under the direction of Principal Investigator Todd A. Wirths, a Brian F. Smith and Associates, Inc. (BFSA) technician conducted a pedestrian survey of the Cypress Sands Project on July 1, 2022. The field methodology employed for the project included walking evenly spaced survey transects set approximately 10 meters apart while visually inspecting the ground surface. The entire property appears to have been recently disked and mowed. No evidence of paleontological resources was observed at the project.

V. PALEONTOLOGICAL SENSITIVITY

Overview

The degree of paleontological sensitivity of any particular area is based on a number of factors, including the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments is one that might have been conducive to the accumulation of organic remains that might have become fossilized over time. Holocene alluvium is generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.,* fossils) and is thus typically assigned a low paleontological sensitivity. Pleistocene (older than 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire and western Riverside County, however, are known to yield important terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, camel, saber-toothed cats, and others (Jefferson 1991). These Pleistocene sediments are thus accorded a high paleontological resource sensitivity.

In the southern California desert regions, the fossil bones of vertebrates have been found in Pleistocene paleosols (Stewart and Hakel 2016, 2017, 2019; Stewart et al. 2012; Raum et al. 2014). Remains include bones from tortoises (and eggshells), lizards, snakes, rodents, rabbits, llamas, camels, horses, deer, and proboscideans, as well as a foot bone of a saber-toothed cat. These specimens were discovered variably associated with calcitic deposits and reddish zones developed in the shallow subsurface, which are attributes typical of paleosols. Stewart and Hakel (2016, 2019) employed radiometric dating methods on tortoise eggshell fragments and pedogenic carbonates, obtaining late Pleistocene ages. However, according to Stewart (personal communication 2021), paleosols identified in the March Air Reserve/Perris/Menifee areas have yet to produce vertebrate fossils.

Professional Standards

The Society of Vertebrate Paleontology has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed below (SVP 2010):

- *High Potential:* Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- *Undetermined Potential:* Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment, and that further study is needed to determine the potential of the rock unit.
- *Low Potential:* Rock units that are poorly represented by fossil specimens in institutional collections or based upon a general scientific consensus that only preserve fossils in rare circumstances.
- *No Potential:* Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

Using these criteria, based on the age of the geologic formation at the project and the fossil record of similar deposits in the region, the project may be considered to have an undetermined to high potential to yield significant paleontological resources.

City of Menifee Sensitivity

Exhibit OSC-4 of the Open Space and Conservation Element of the City of Menifee General Plan (City of Menifee 2013) assigns a "High Paleologic (*sic;* Paleontologic) Sensitivity" to this area of the city, where very old alluvial fan deposits are mapped at the surface (Figure 4). However, no specific guidance or monitoring depth thresholds are provided.

VI. CONCLUSIONS AND RECOMMENDATIONS

Research has confirmed the existence of the potentially fossiliferous Pleistocene very old alluvial fan deposits at the project. The occurrence of terrestrial vertebrate fossils from Pleistocene alluvial fan deposits in western Riverside County is well documented. The "High" paleontological sensitivity rating assigned to these formations for yielding paleontological resources supports the recommendation that paleontological monitoring be implemented during mass grading and excavation activities in these deposits to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Full-time monitoring of undisturbed very old alluvial fan deposits at the project is warranted starting at five feet below the surface. A Paleontological Resource Impact Mitigation Program (PRIMP) is suggested below and should be approved and implemented before the issuance of the grading permit.

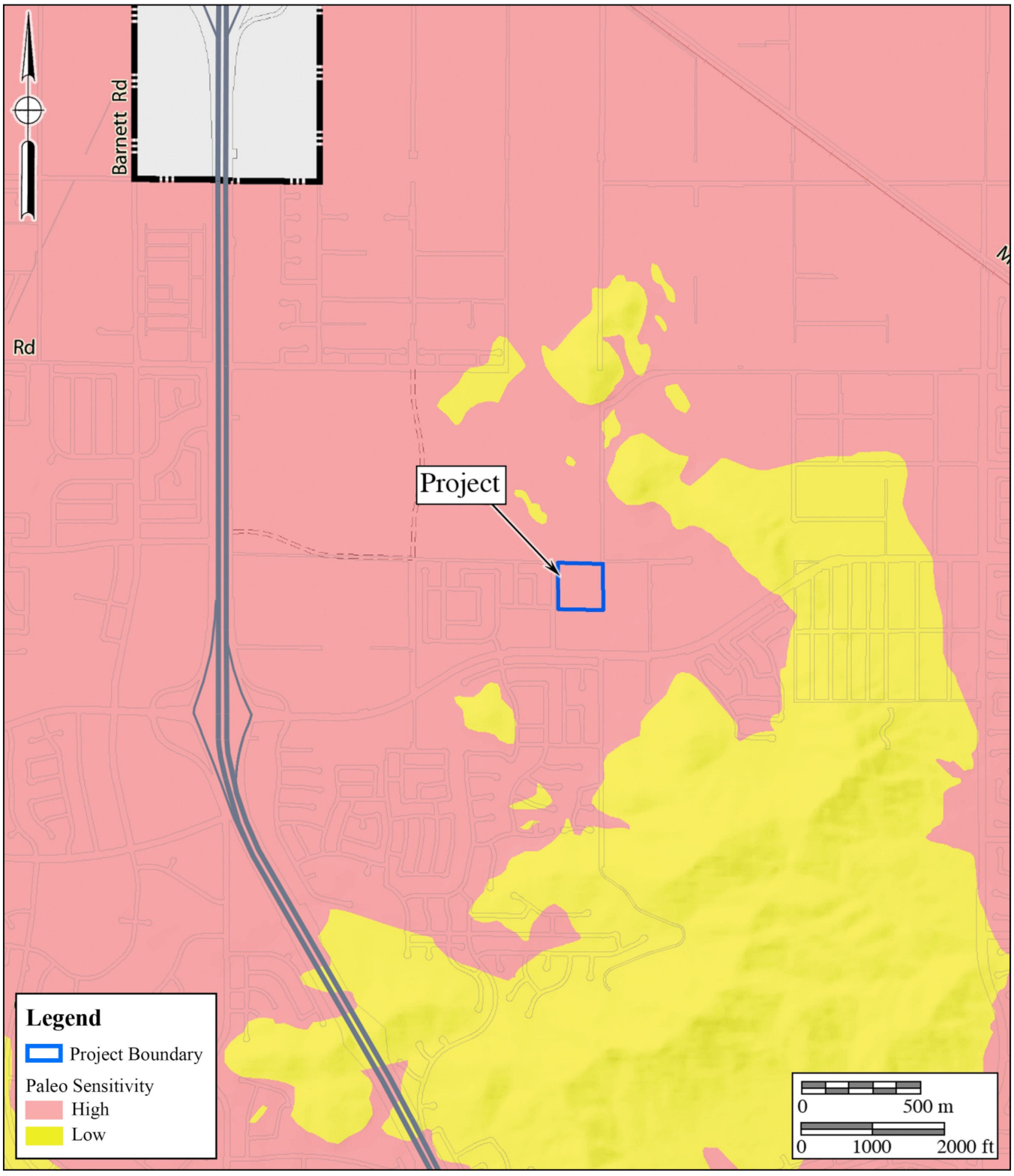


Figure 4

Paleontological Sensitivity Map

The Cypress Sands Project

Exhibit OSC-4, From the City of Menifee General Plan (2013)

Suggested PRIMP

The following guidelines, outlined below, are based on the findings stated above, which are consistent with the provisions of CEQA, the City of Menifee, and the guidelines of the Society of Vertebrate Paleontology (2010) for any mass grading and excavation-related activities, including utility trenching, during construction within the project. This suggested PRIMP, when implemented, would reduce potential impacts to paleontological resources to a level below significant:

1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources shall be performed by a city-qualified paleontologist or paleontological monitor supervised by a city-qualified paleontologist. Starting at five feet below the surface, monitoring will be conducted full-time in areas of grading or excavation in undisturbed Pleistocene very old alluvial fan deposits.
2. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or, if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery.
3. Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils are collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated and the fossils are removed to a safe place. On mass grading projects, discovered fossil sites are protected by flagging to prevent them from being overrun by earthmovers (scrapers) before salvage begins. Fossils are collected in a similar manner, with notes and photographs being taken before removing the fossils. Precise location of the site is determined with the use of handheld GPS units. If the site involves remains from a large terrestrial vertebrate, such as large bone(s) or a mammoth tusk, that is/are too large to be easily removed by a single monitor, a fossil recovery crew shall excavate around the find, encase the find within a plaster and burlap jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment may be solicited to help remove the jacket to a safe location.
4. Isolated fossils are collected by hand, wrapped in paper, and placed in temporary collecting flats or five-gallon buckets. Notes are taken on the map location and

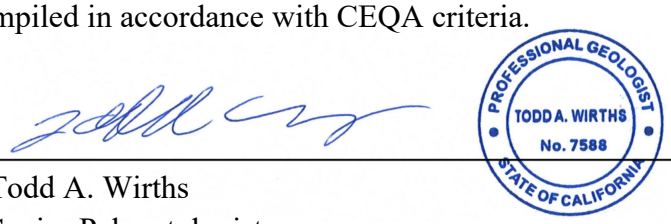
stratigraphy of the site, which is photographed before it is vacated and the fossils are removed to a safe place.

5. Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from one to several five-gallon buckets of fossiliferous sediment. If it is possible to dry screen the sediment in the field, a concentrated sample may consist of one or two buckets of material. For vertebrate fossils, the test is usually the observed presence of small pieces of bones within the sediments. If present, as multiple five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.
6. In accordance with the "Microfossil Salvage" section of the SVP guidelines (2010:7), bulk sampling and screening of fine-grained sedimentary deposits (including carbonate-rich paleosols) must be performed if the deposits are identified to possess indications of producing fossil "microvertebrates" to test the feasibility of the deposit to yield fossil bones and teeth.
7. In the laboratory, individual fossils are cleaned of extraneous matrix, any breaks are repaired, and the specimen, if needed, is stabilized by soaking in an archivally approved acrylic hardener (*e.g.,* a solution of acetone and Paraloid B-72).
8. Recovered specimens are prepared to a point of identification and permanent preservation (not display), including screen-washing sediments to recover small invertebrates and vertebrates. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
9. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.,* the WSC) shall be conducted. The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. Prior to curation, the lead agency (the City of Menifee) will be consulted on the repository/museum to receive the fossil material.
10. A final report of findings and significance will be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location(s). The report, when submitted to, and accepted by, the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (*i.e.,* fossils) that might have been lost or otherwise adversely affected without such a program in place.

VII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements,

and information presented are true and correct to the best of my knowledge and belief, and have been compiled in accordance with CEQA criteria.



July 20, 2022

Todd A. Wirths
Senior Paleontologist
California Professional Geologist No. 7588

Date

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APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

Senior Paleontologist

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: twirths@bfsa-ca.com

Education

Master of Science, Geological Sciences, San Diego State University, California **1995**

Bachelor of Arts, Earth Sciences, University of California, Santa Cruz **1992**

Professional Certifications

California Professional Geologist #7588, 2003
Riverside County Approved Paleontologist
San Diego County Qualified Paleontologist
Orange County Certified Paleontologist
OSHA HAZWOPER 40-hour trained; current 8-hour annual refresher

Professional Memberships

Board member, San Diego Geological Society
San Diego Association of Geologists; past President (2012) and Vice President (2011)
South Coast Geological Society
Southern California Paleontological Society

Experience

Mr. Wirths has more than a dozen years of professional experience as a senior-level paleontologist throughout southern California. He is also a certified California Professional Geologist. At BFSA, Mr. Wirths conducts on-site paleontological monitoring, trains and supervises junior staff, and performs all research and reporting duties for locations throughout Los Angeles, Ventura, San Bernardino, Riverside, Orange, San Diego, and Imperial Counties. Mr. Wirths was formerly a senior project manager conducting environmental investigations and remediation projects for petroleum hydrocarbon-impacted sites across southern California.

Selected Recent Reports

2019 *Paleontological Assessment for the 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County*. Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County*. Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California*. Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California*. Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California*. Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County*. Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California*. Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego*. Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

APPENDIX B

Paleontological Records Searches

SAN BERNARDINO COUNTY MUSEUM

2024 Orange Tree Lane • Redlands, California USA 92374-4560
(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org
TDD (909) 792-1462

COUNTY OF SAN BERNARDINO

ROBERT L. McKERNAN
Director

1 June 2010

Discovery Works, Incorporated
attn: Beth Padon
10591 Bloomfield
Los Alamitos, CA 90720

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, CITY OF MENIFEE GENERAL PLAN, RIVERSIDE COUNTY, CALIFORNIA**

Dear Ms. Padon,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the City of Menifee General Plan in Riverside County, California. Specifically, the study area encompasses all or portions of sections 10 through 17 and 20 through 36, Township 5 South, Range 3 West, San Bernardino Base and Meridian; sections 25 and 36, T 5S, R 4W, SBB&M; section 19, T 6S, R 2W, SBB&M; and sections 1 through 6, 8 through 17, and 20 through 24, T 6S, R 3W, SBB&M, as seen on the Romoland, California 7.5' United States Geological Survey topographic quadrangle map (1953 edition). Portions of the City of Menifee not mapped on this quadrangle were not considered in this review, at your request.

Previous geologic mapping (Rogers, 1965; Morton, 2003) indicates that the City of Menifee is located on relatively flat-lying alluvial plains surrounding and separating several small to moderate hills. In general, these topographic highs and lows can be used as a baseline against which to estimate paleontologic sensitivity: the hills generally lack potential for significant fossil resources (although see below), while the alluvial plains and the sediments flanking the base of the hills have high paleontologic sensitivity.

The low-lying alluvial plains in the City of Menifee consist primarily of surface exposures of Quaternary sedimentary deposits ranging in age from the earliest Pleistocene to the earliest Holocene Epochs. These sedimentary rock units are mapped as very old fan deposits of middle to early Pleistocene age (= unit **Qvof**), older fan deposits of middle to late Pleistocene age (= **Qof_a**), and young alluvial fan and valley deposits of Holocene and latest Pleistocene age (= **Qya**, **Qyf**, and **Qyv**). The very old fan deposits occur at the base and lower flanks of the low hills present throughout the city, while younger Holocene deposits are constrained in washes and shallow arroyos where they form a thin sedimentary veneer over older Pleistocene alluvium. The remainder of the flat-lying areas within the city are middle to later Pleistocene fan deposits. Of these sedimentary units, the young alluvial fan and valley deposits are too young geologically to have any potential to

GREGORY C. DEVEREAUX
County Administrative Officer

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contain significant vertebrate fossils. For this reason, these sediments are assigned low paleontologic sensitivity. In contrast, Pleistocene alluvial valley deposits and very old fan deposits, mapped throughout the project alignment, have high paleontologic sensitivity. Similar older Pleistocene alluvial sediments elsewhere throughout Riverside and San Bernardino Counties and the Inland Empire have been reported to yield significant fossils of plants and extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Anderson and others, 2002; Scott and Cox, 2008; Springer and others, 2009, 2010). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Scott and Cox, 2008; Springer and others, 2009, 2010).

With respect to the low hills throughout the City of Menifee, these consist for the most part (after Morton, 2003) of rock outcrops with low potential to contain significant fossil resources. Outcrops include Mesozoic metasedimentary rocks of the Peninsular Ranges batholith (= units **M_zgp, M_zi, M_zp, M_zq, M_zqg,** and **M_zu**) and Cretaceous granitic rocks of the Peninsular Ranges batholith (= **Kgb, Kdvg, Kpvg, Kpvt,** and **Kt**), as well as intermixed Mesozoic schist and Cretaceous granitics (=**KgMz**). These Mesozoic metasedimentary rocks and Cretaceous granitic rocks have no potential to contain significant fossil resources. However, the hills forming the western border of the City of Menifee do incorporate low-lying areas in portions of sections 30 and 31, T 5S, R 3W, and sections 25 and 36, T 5S, R 4W, that are mapped (Morton, 2003) as early to middle Pleistocene older alluvial channel gravels (= **$Qvoa_g$**). These sediments have undetermined potential to contain fossil resources.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that several previously-recorded paleontologic resource localities are present within the boundaries of the study area. Paleontologic resource localities SBCM 5.6.626, 5.6.671 - 5.6.683, and 5.6.868 - 5.6.875 are situated within the northeastern portion of the city, while locality SBCM 5.6.627 is located near the eastern city border. (Data for these localities are not provided herein, but should be requested as appropriate when excavation or development is planned in these portions of the city.) These localities yielded fossil remains of extinct camel (*Camelops hesternus*) and small vertebrates, including rabbits, rodents and lizards. The presence of these localities in the study area confirms the presence of fossiliferous Pleistocene alluvium in the region, and demonstrates the high paleontologic sensitivity of this alluvium. This sensitivity is further reinforced by the relative proximity of the proposed project alignment to Diamond Valley Lake, situated several miles to the east; construction of this lake resulted in the recovery of several thousand fossils of late Pleistocene age from subsurface Pleistocene alluvium (Scott and Cox, 2008; Springer and others, 2009, 2010).

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development will have high potential to adversely impact significant nonrenewable paleontologic resources present within portions of the City of Menifee, particularly the flat-lying alluvial plains. When projects are scheduled or planned to be conducted in these

regions, a qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources. These mitigation programs should be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside and the proposed guidelines of the Society of Vertebrate Paleontology. These programs should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established, accredited museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts to paleontologic resources.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

WESTERN SCIENCE CENTER

Brian F Smith and Associates
Todd Wirths
14010 Poway Road
Poway, CA 92064

July 19, 2021

Dear Mr. Wirths,

This letter presents the results of a record search conducted for the TR 36430-2 Mountain Gate Project in Riverside County, California. The project site is located north of east of Briggs Road and north of Case Road in Section 19, Township 5 South and Range 2 West on the *Romoland, CA* USGS 7.5 minute topographic quadrangles.

The geologic unit underlying the project area is mapped primarily as alluvial fan deposits dating from the middle to late Pleistocene epoch, with Cretaceous granodiorite to tonalite deposits along the northeastern project border (Morton, Bovard & Morton, 2003). Granodiorite and tonalite units are not considered to be paleontologically sensitive; however, Pleistocene alluvial units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area but has one fossil locality associated with the Diamond Valley Lake Project within a one mile radius and many Diamond Valley Lake Project localities within a two mile radius in similarly mapped sediments. Southern California Pleistocene units in general are well known to produce fossil localities and the nearby Diamond Valley Lake Project produced thousands of fossil specimens including those associated with mammoth (*Mammuthus columbi*), mastodon (*Mammut pacificus*) sabertooth cats (*Smilodon fatalis*), ancient horse (*Equus sp*.) and many other Pleistocene megafauna and microfauna.

Any fossils recovered from the TR 36430-2 Mountain Gate Project area would be scientifically significant. Excavation activity associated with development of the area has the potential to impact the paleontologically sensitive Pleistocene units and it is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

If you have any questions, or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,



Darla Radford
Collections Manager

Appendix E

Geotechnical and Infiltration Evaluation

GEOTECHNICAL AND INFILTRATION EVALUATION
PROPOSED CYPRESS SANDS APARTMENT PROJECT
ASSESSOR'S PARCEL NUMBER (APN) 333-050-034
CHAMBERS AVENUE AND ANTELOPE ROAD
MENIFEE, RIVERSIDE COUNTY, CALIFORNIA

PREPARED FOR

EMPIRE CONSTRUCTION MANAGEMENT
2280 WARDLOW CIRCLE, SUITE 250
CORONA, CALIFORNIA 92705

PREPARED BY

GEOTEK, INC.
1548 NORTH MAPLE STREET
CORONA, CALIFORNIA 92878

PROJECT NO. 2978-CR **JANUARY 4, 2022**

GEOTEK

GeoTek, Inc.
1548 North Maple Street, Corona, California 92878
(951) 710-1160 Office (951) 710-1167 Fax www.geotekusa.com

January 4, 2022
Project No. 2978-CR

Empire Construction Management
2280 Wardlow Circle, Suite 250
Corona, California 92880

Attention: Mr. Brian King

Subject: **Geotechnical and Infiltration Evaluation**
Proposed Cypress Sands Apartment Project
Assessor's Parcel Number (APN) 333-050-034
Chambers Avenue and Antelope Road
City of Menifee, Riverside County, California

Dear Mr. King:

GeoTek, Inc. (GeoTek) is pleased to provide the results of this Geotechnical and Infiltration Evaluation for the proposed project located in the City of Menifee, Riverside County, California. This report presents the results of GeoTek's evaluation, discussion of findings, and provides geotechnical recommendations for foundation design and construction.

Based upon review and evaluation, site development appears feasible from a geotechnical viewpoint provided that the recommendations included in this report are incorporated into the design and construction phases of the project.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact GeoTek.

Respectfully submitted,
GeoTek, Inc.





Bruce A. Hick
GE 2284, Exp. 12/31/22
Geotechnical Engineer

Edward H. LaMont
CEG 1892, Exp. 07/31/22
Principal Geologist

Anna M. Scott
Project Geologist

Distribution: (1) Addressee via email (one PDF file)

G:\Projects\2951 to 3000\2978CR Empire Construction Management Cypress Sand Apartment Menifee\Geotechnical and Infiltration Evaluation\2978CR Geotechnical and Infiltration Evaluation Cypress Sands.doc

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1. PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to evaluate the geotechnical engineering and geologic conditions at the project site, as outlined in GeoTek's proposal P-1106121-CR, dated November 19, 2021. Services provided for this study included the following:

- Research and review of available geologic data and general information pertinent to the site,
- Perform a site reconnaissance,
- Site exploration consisting of the excavation, logging, and sampling of five (5) exploratory test borings extending to depths ranging from about 20.5 to 51.0 feet below grade,
- Excavation of two (2) additional borings to depths of about five (5) and ten (10) feet below grade and performing an infiltration test in each boring,
- Laboratory testing of soil samples collected during the field investigation,
- Review and evaluation of site seismicity and geologic hazards, and
- Preparation of this geotechnical report which presents GeoTek's findings, conclusions, and recommendations for this site.

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

The approximate 9.27-acre square-shaped project site is located on adjacent to the southwest corner of Chambers Avenue and Antelope Road, in the City of Menifee, Riverside County, California (see Figure 1). Access to the project is available from Chambers Avenue, Antelope Road and Chatham Lane, all paved improved streets located adjacent to the northern, eastern and western boundaries of the site, respectively. The extension of Tioga Lane, a paved improved street, forms the southern boundary of the site.

Topographically, the site slopes gently downward to the west at an approximate two (2) percent gradient. The elevation of the site is approximately 1,500 feet. There is approximately 15 feet of elevation differential across the site. The site was vacant land at the time of the field exploration. The site was vegetated with a light covering of weeds and grasses.

2.2 PROJECT DESCRIPTION

GeoTek has not received a development/site plan as of the date of this report. Based upon discussions with project parties, GeoTek understands the subject property is to be developed into a multi-family residential development with associated underground utilities, interior drive lanes, landscaping and hardscaping improvements. Stormwater management basins are proposed for the subject site. Slope heights including remedial excavations are not anticipated to exceed ten feet in height.

The proposed residential structures are anticipated to be of wood-frame construction, one to three-stories in height, and incorporate conventional shallow foundations and concrete slab-on-grade floors. Sewage disposal is anticipated to be by a public sewer system. For the purposes of this report, it is assumed maximum column and wall loads will be about 75 kips and 3.5 kips per foot, respectively. Once actual loads are known that information should be provided to GeoTek to determine if modifications to the recommendations presented in this report are warranted.

If site development differs from the assumptions made herein, the recommendations included in this report should be subject to further review and evaluation. Site development plans should be reviewed by GeoTek when they become available.

3. FIELD EXPLORATION AND LABORATORY TESTING

3.1 FIELD EXPLORATION

The field exploration for this report was conducted on December 16, 2021 and consisted of excavating five (5) geotechnical exploratory borings with a hollow-stem auger drill rig to depths ranging from about 20.0 to 51.0 feet below grade. The approximate locations of the GeoTek excavations are shown on the Boring Location Map (Figure 2). A geologist from GeoTek logged the excavations and collected soil samples for use in subsequent laboratory testing. The logs of the exploratory borings are included in Appendix A.

Relatively undisturbed soil samples were recovered at various intervals in the geotechnical borings with a California sampler. The California sampler is a 3-inch outside diameter, 2.5-inch inside diameter, split barrel sampler lined with brass rings. The sampler was 18 inches long. The sampler conformed to the requirements of ASTM D 3550. A 140-pound automatic trip hammer was utilized, dropping 30 inches for each blow. The relatively undisturbed samples, together with bulk samples of representative soil types, were returned to the laboratory for testing and evaluation. The California sampler test data are presented on the boring logs in Appendix A.

In Boring B-1, standard penetration tests (SPT) were performed with a 2.0-inch outside diameter, 1.5-inch inside diameter, split-barrel sampler. The sampler was 18 inches long. The inside diameter of the sampler shoe was 1.4 inches. The sampler was unlined. The sampler conformed to the requirements of ASTM D 1586. A 140-pound automatic trip hammer was utilized, dropping 30 inches for each blow. The sampler penetration test data are presented on the Log for Boring for Borings B-1.

Percolation Testing

In addition to the geotechnical exploratory borings, two percolation test borings (I-1 and I-2) were excavated in the southwestern portion of the site to depths of about 5 and 10 feet below the existing ground surface. Infiltration/percolation testing was conducted in these borings in general accordance with the requirements of the County of Riverside.

The percolation tests consisted of drilling an eight-inch diameter test hole to the desired depth and installing approximately two inches of gravel in the bottom of the hole. A three-inch diameter perforated PVC pipe, wrapped in a filter sock, was placed in the excavations and the annular space was filled with gravel to prevent caving within the boring. Water was then placed in the borings to presoak the holes and percolation testing was performed the following the pre-soak period. Following presoaking it was determined that "silty soil" criteria was met within both percolation borings. The percolation tests were then performed which consisted of adding water to each test hole and measuring the water drop over a 30-minute period. The water drop was recorded for six hours. Water was added to the test holes after each test interval of 30-minutes. The field percolation rates were then converted to an infiltration rate using the Porchet Method.

The results of the conversions indicate infiltration rate range from about 0.19 to 0.23 inches per hour. Copies of the percolation data sheets and the Porchet infiltration rate conversion calculations are presented in Appendix C. No factors of safety were applied to the rates provided. Over the lifetime of the infiltration areas, the infiltration rates may be affected by

sediment build up and biological activities, as well as local variations in near surface soil conditions. A suitable factor of safety should be applied to the field rate in designing the infiltration system.

It should be noted that the infiltration rates provided above were performed in relatively undisturbed on-site soils. Infiltration rates will vary and are mostly dependent on the underlying consistency of the site soils and relative density. Infiltration rates may be impacted by weight of equipment travelling over the soils, placement of engineered fill and other various factors. GeoTek assumes no responsibility or liability for the ultimate design or performance of the storm water facility.

3.2 LABORATORY TESTING

Laboratory testing was performed on selected relatively undisturbed ring and bulk samples collected during the field exploration. The purpose of the laboratory testing was to confirm the field classification of the materials encountered and to evaluate their physical properties for use in the engineering design and analysis. Results of the laboratory testing program along with a brief description and relevant information regarding testing procedures are included on the exploratory borings logs included in Appendix A and in Appendix B.

4. GEOLOGIC AND SOILS CONDITIONS

4.1 REGIONAL SETTING

The subject property is situated in the Peninsular Ranges geomorphic province. The Peninsular Ranges province is one of the largest geomorphic units in western North America. It extends approximately 975 miles south of the Transverse Ranges geomorphic province to the tip of Baja California. This province varies in width from about 30 to 100 miles. It is bounded on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province.

The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks. Several major fault zones are found in this province. The Elsinore Fault zone and the San Jacinto Fault zone trend northwest-southeast and are found near the middle of the province. The San Andreas Fault zone borders the northeasterly margin of the province.

More specific to the subject property, the site is located in an area geologically mapped to be underlain by alluvium (Dibblee, T.W. and Minch, J.A., 2003). No active faults are shown in the immediate site vicinity on the maps reviewed for the area.

4.2 GENERAL SOIL CONDITIONS

A brief description of the earth materials encountered is presented in the following section. Based on the site reconnaissance, the exploratory excavations and review of published geologic maps, the area investigated is locally underlain by undocumented fill that is over alluvium.

4.2.1 Fill

Fill was not encountered in any of the exploratory borings at the time of drilling. Fill may be present within unexplored areas of the site, especially adjacent to existing streets.

4.2.2 Alluvium

Alluvial soils were encountered in all of the borings and extended to the maximum depth explored (Boring B-1 – 51.0 feet). As encountered in the borings, the alluvium consisted of interbedded layers of sandy and clayey silts, silty sands, clayey sands and sandy and silty clays (ML, SM, SC and CL soil types based upon the Unified Soil Classification System).

Based on the laboratory test results, the near surface soils have a "medium" expansion potential (ASTM D 4829). Based on the laboratory test results, the near surface soils have a soluble sulfate content of less than 0.1 percent (ASTM D 4327). The test results are provided in Appendix B.

4.3 SURFACE WATER AND GROUNDWATER

4.3.1 Surface Water

If encountered during earthwork operations, surface water on this site will likely be the result of precipitation or possibly some minor surface run-off from the surrounding areas. Overall site area drainage varies due to the site topography and existing improvements. Provisions for surface drainage will need to be accounted for by the project civil engineer.

4.3.2 Groundwater

Seepage (perched groundwater) was encountered within exploratory Boring B-1 drilled at the site at a depth of approximately 35.6 below the existing ground surface at the boring location. Based on a review of groundwater depths noted on the State Department of Water Resources Water Data Library website, it is estimated the groundwater depth on this site is

deeper than 50 feet below existing site grade. Based on the results of the field exploration, review of site area geomorphology and geology, groundwater is not anticipated to adversely affect the proposed improvements.

4.4 FAULTING AND SEISMICITY

4.4.1 Faulting

The geologic structure of the entire California area is dominated mainly by northwest-trending faults associated with the San Andreas system. The site is in a seismically active region. However, the site is not situated within a State of California designated *"Alquist-Priolo"* Earthquake Fault Zone. The nearest known active fault is the Elsinore fault located about 13 miles to the southwest.

4.4.2 Seismic Design Parameters

The site is located at approximately 33.7201 degrees West Latitude and -117.1726 degrees North Longitude. Site spectral accelerations (S_a and S_1) for 0.2 and 1.0 second periods for a Class "D" site, was determined from the SEAOC/OSHPD web interface that utilizes the USGS web services and retrieves the seismic design data and presents that information in a report format. Using the ASCE 7-16 option on the SEAOC/OSHPD website results in the values for S_{M1} and S_{D1} reported as "null-See Section 11.4.8" (of ASCE 7-16). As noted in ASCE 7-16, Section 11.4.8, a site-specific ground motion procedure is recommended for Site Class D when the value S_1 exceeds 0.2. The value S_1 for the subject site exceeds 0.2.

For a site Class D, an exception to performing a site-specific ground motion analysis is allowed in ASCE 7-16 where S_1 exceeds 0.2 provided the value of the seismic response coefficient, Cs, is conservatively calculated by Eq 12.8-2 of ASCE 7-16 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for $T_L \geq T > 1.5T_s$ or Eq. 12.8-4 for $T > T_L$.

The results, based on the 2015 NEHRP and the 2019 CBC, are presented in the following table assuming that the exception as allowed in ASCE 7-16 is applicable. If the exception is deemed not appropriate, a site-specific ground motion analysis will be required.

Final selection of the appropriate seismic design coefficients should be made by the project structural engineer based upon the local practices and ordinances, expected building response and desired level of conservatism.

SITE SEISMIC PARAMETERS	
Mapped 0.2 sec Period Spectral Acceleration, S_S	1.403g
Mapped 1.0 sec Period Spectral Acceleration, S_1	0.521g
Site Coefficient for Site Class "D", F_a	1.0
Site Coefficient for Site Class "D", F_V	1.779
Maximum Considered Earthquake Spectral Response Acceleration for 0.2 Second, S_{MS}	1.403g
Maximum Considered Earthquake Spectral Response Acceleration for 1.0 Second, S_{M1}	0.927g
5% Damped Design Spectral Response Acceleration Parameter at 0.2 Second, S_{DS}	0.936g
5% Damped Design Spectral Response Acceleration Parameter at 1 second, S_{D1}	0.618g
Peak Ground Acceleration (PGA_M)	0.55g
Seismic Design Category	D

4.5 LIQUEFACTION

Liquefaction describes a phenomenon in which cyclic stresses, produced by earthquake-induced ground motion, create excess pore pressures in relatively cohesionless soils. These soils may thereby acquire a high degree of mobility, which can lead to lateral movement, sliding, consolidation and settlement of loose sediments, sand boils and other damaging deformations. This phenomenon occurs only below the water table, but, after liquefaction has developed, the effects can propagate upward into overlying non-saturated soil as excess pore water dissipates.

The factors known to influence liquefaction potential include soil type and grain size, relative density, groundwater level, confining pressures, and both intensity and duration of ground shaking. In general, materials that are susceptible to liquefaction are loose, saturated granular soils having low fines content under low confining pressures.

The project site is not located within an area mapped by the State of California for liquefaction potential. The County of Riverside has designated the site as not having a "low" potential for liquefaction.

Seepage (perched groundwater) was encountered within exploratory Boring B-1 drilled at the site at a depth of approximately 35.6 below the existing ground surface at the boring location. Based on a review of groundwater depths noted on the State Department of Water Resources Water Data Library website, it is estimated the groundwater depth on this site is deeper than 50 feet below existing site grade. For this report, a high groundwater depth of 30 feet was used in the site liquefaction analysis. The soil profile identified within B-1 was also used. A mean magnitude weighted (Mw) seismic event of 7.3 was incorporated into the analysis. A

PGA_M value of 0.55g was obtained from the USGS website and incorporated the ASCE 7-16 provisions. Based on the recommendations provided in this report, engineered fill will be incorporated within the upper three feet of pad grade; this change has been incorporated into the liquefaction analysis. GeoTek evaluated the liquefaction potential of the on-site soils using the computer program LiquefyPro Version 5.

The results of the analyses indicated that the soils within Boring B-1 are not susceptible to significant soil liquefaction during the design-level earthquake. A seismic-induced total settlement of approximately 0.07 inches is estimated with an estimated differential seismic-induced settlement of about 0.04 inches over a 40-foot span. These magnitudes of estimated seismic-induced settlements are within limits recommended within SP-117A where structural mitigation is possible. Therefore, deep ground improvement is not warranted for this site. The results of the liquefaction analysis are presented within Appendix D.

4.6 OTHER SEISMIC HAZARDS

An assessment of the potential "dry" settlement (i.e., settlement above the water table) resulting from seismic shaking of the site was evaluated. For this analysis, a groundwater depth of 35.6 feet, a ground acceleration (PGAM) of 0.55g and a mean earthquake magnitude of 7.3. The ground acceleration and earthquake magnitude were obtained from the USGS websites. The computer software program LiquefyPro and the soil profiled from Boring B-1 were used in the analysis. Based on the recommendations provided in this report, engineered fill will be incorporated within the upper three feet of pad grade; this change has been incorporated into the settlement analysis. The results of this analysis indicate a potential ground surface settlement of about 0.10 inches is possible. A differential seismic settlement of about 0.05 over a 40 foot span is estimated. Based on these estimated magnitudes, ground modification or special foundation design is not deemed necessary. The results of the seismic dry settlement analysis are presented in Appendix D. However, the estimated seismic settlements should be considered in structural design.

Due to the general flat terrain, the potential for seismic induced landslides or lateral spreading is considered nil. The potential for secondary seismic hazards such as a seiche and tsunami is considered negligible due to site elevation and distance from an open body of water.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL

Development of the site appears feasible from a geotechnical engineering viewpoint. The following recommendations should be incorporated into the design and construction phases of development.

5.2 EARTHWORK CONSIDERATIONS

5.2.1 General

Earthwork and grading should be performed in accordance with the applicable grading ordinances of the City of Menifee, the 2019 California Building Code (CBC) and recommendations contained in this report. The Grading Guidelines included in Appendix E outline general procedures and do not anticipate all site-specific situations. In the event of conflict, the recommendations presented in the text of this report should supersede those contained in Appendix E.

5.2.2 Site Clearing

Initial site preparation should commence with removal of debris, deleterious materials and vegetation within the limits of the planned improvements. These materials should be properly disposed of off-site. Voids resulting from removing any materials should be replaced with engineered fill materials with expansion characteristics similar to the onsite materials.

5.2.3 Site Preparation

Due to the non-uniform nature and loose condition of the upper alluvium, it is recommended that the soils be removed beneath the planned building footprint of the proposed structures to a depth of at least three (3) feet below existing grades, or two (2) feet beneath the base of the proposed foundations, whichever is greater. Removal bottoms should be relatively uniform in soil type which is not adversely porous and having an in-place density of at least 85 percent of the soil's maximum dry density as determined by ASTM D 1557 test procedures. A representative of this firm should observe and approve the bottom of all remedial excavations. The lateral extent of this recommended over-excavation should extend at least 5 feet beyond the building or foundation limits.

Following site clearing operations, over-excavation and lowering of site grades, where necessary, it is recommended that the exposed subgrade soils beneath all surface improvements be proof rolled with a heavy rubber-tired piece of construction equipment approved by and in the presence of the geotechnical engineering representative. The proof rolling equipment should possess a minimum weight of 15 tons and proof rolling should include at least 4 passes, two in each perpendicular direction. All soil that ruts or excessively deflects during proof rolling should be removed as recommended by the GeoTek representative. Following proof rolling and removal of any unsuitable bearing soil, the exposed subgrade should be scarified to a depth of about 12 inches, be moisture conditioned to slightly above the soil's optimum moisture content and then be compacted to at least 90 percent of the soil's maximum dry density as determined by ASTM D-1557 test procedures.

5.2.4 Engineered Fill

The on-site soils are generally considered suitable for reuse as engineered fill provided they are free from vegetation, debris, oversized materials (6 inch diameter or greater) and other deleterious material. All areas should be brought to final subgrade elevations with fill materials that are placed and compacted in general accordance with minimum project standards. Engineered fill should be placed in 6- to 8-inch loose lifts, moisture conditioned to slightly above the optimum moisture content and compacted to a minimum relative compaction of 90 percent as determined by ASTM D-1557 test procedures.

If wet soils are encountered during remedial grading, methods for drying soils such as stockpiling or mixing with dry soils may be required to bring the soils to the required moisture content for placement as engineered fill. Placement of engineered fill should be observed and tested on a full-time basis by a GeoTek representative during grading activities.

5.2.5 Excavation Characteristics

Excavations in the on-site materials should be readily accomplished with heavy-duty earthmoving or excavating equipment in good operating condition. All excavations should be formed in accordance with current Cal-OSHA requirements.

5.2.6 Trench Excavations and Backfill

Temporary trench excavations within the on-site materials should be stable at a 1:1 inclination for short durations during construction and where cuts do not exceed 15 feet in height. Deeper temporary excavations should be reviewed by GeoTek prior to their planned excavation to determine if supplemental recommendations or analysis are warranted. It is anticipated that temporary cuts to a maximum height of 4 feet can be excavated vertically.

Trench excavations should conform to Cal-OSHA regulations. The contractor should have a competent person, per OSHA requirements, on site during construction to observe conditions and to make the appropriate recommendations.

Utility trench backfill should be compacted to at least 90 percent relative compaction (as determined by ASTM D-1557 test procedures). Under-slab trenches should also be compacted to project specifications. Where applicable, based on jurisdictional requirements, the top 12 inches of backfill below subgrade for road pavements should be compacted to at least 95 percent relative compaction. On-site materials may not be suitable for use as bedding material but should be suitable as backfill provided particles larger than 6 inches are removed.

Compaction should be achieved with a mechanical compaction device. Ponding or jetting of trench backfill is not recommended. If backfill soils have dried out, they should be properly moisture conditioned prior to placement in trenches.

5.2.7 Shrinkage and Bulking

Several factors will impact earthwork balancing on the site, including shrinkage, subsidence, trench spoil from utilities and footing excavations, as well as the accuracy of topography.

Shrinkage and subsidence are primarily dependent upon the degree of compactive effort achieved during site grading and construction. For planning purposes, a shrinkage factor of about 10 to 15 percent may be considered for excavation and recompaction of the native soils. Site balance areas should be available in order to adjust project grades, depending on actual field conditions at the conclusion of earthwork. Subsidence of approximately 0.10 foot of the underlying soils may be anticipated resulting from site grading and preparation.

5.2.8 Grading Plan Review

Upon completion of the site grading plans, it is recommended that those plans be provided to GeoTek for review. Based on that review, some modifications to the recommendations provided in this report may be necessary.

5.3 DESIGN RECOMMENDATIONS

5.3.1 Foundation Design Criteria

Presented below are post-tensioned foundation design parameters for the proposed structures at the site underlain by soils having a "medium" expansion index. These parameters are in general conformance with *Design of Post-Tensioned Slabs-on-Ground*, Third Edition *with 2008*

Supplement (PTI, 2008). These recommendations are minimal recommendations and are not intended to supersede the design by the project structural engineer.

DESIGN PARAMTERS FOR POST-TENSIONED SLABS	
Foundation Design Parameter	Design Value
	"Medium" Expansion Index (LL≤85; PI≤45; Passing #200 Sieve ≈ 63%; Clay fines ≈ 60%)
Edge Moisture Variation Distance, e_m -Edge Lift (swelling) -Center Lift (shrinkage)	 2.9 ft 5.3 ft
Soil Differential Movement, y_m -Edge Lift (swelling) -Center Lift (shrinkage)	 ≈1.49 in ≈-0.62 in
Exterior Perimeter Beam Embedment	One- and Two-Story – 18 inches* Three-Story – 24 inches*
Presaturation of Subgrade Soil (Percent of Optimum)	Minimum 120% to a depth of 18 inches

*Required depth of perimeter beam/stiffening rib per structural calculations may govern.
The following assumptions were used to generate e_m and y_m values: Thornthwaite Moisture Index = -20; constant suction value = 3.9pF; post-equilibrium case assumed with wet (swelling) cycle going from 3.9pF to 3.0pF and drying (shrinking) cycle going from 3.9pF to 4.5pF.

Post-tensioned slabs should be designed in accordance with the *2019 CBC* and PTI design methodology. The bottom of the perimeter edge beam/deepened footing should be designed to resist tension forces using either cable or conventional reinforcement, per the structural engineer.

Based on the expansion index testing performed for this report and visual examination of the site soils, site soils possess a "medium" (51-90) expansion index (ASTM D4829). Therefore, it is GeoTek's opinion that conventional foundations supported by engineered fill may be used for this site. Foundation design criteria for a conventional foundation system, in general conformance with the 2019 CBC, are presented herein. These are typical design criteria and are not intended to supersede the design by the structural engineer. A summary of GeoTek's preliminary foundation design recommendations for conventional foundations is presented in the table below:

Design Parameter	"Medium" Expansion Index (51≤EI≤90)
Foundation Depth or Minimum Perimeter Beam Depth (inches below lowest adjacent grade)	18 - One- and -Two Stories 24 - Three Stories
Minimum Foundation Width (Inches)*	12 - One-Stories 15 - Two-Stories 18 - Three Stories
Minimum Slab Thickness (actual)	4 inches
Minimum Slab Reinforcing	No. 3 bars at 12-inch centers, or No. 4 bars at 18-inch center, each way, placed in the middle one-third of slab
Minimum Footing Reinforcement	Four (4) No. 4 Reinforcing Bars, two top and two bottom
Effective Plasticity Index	PI<45**
Presaturation of Subgrade Soil (Percent of Optimum)	Minimum 120% to a depth of 18 inches prior to placement of concrete

*Code minimums per Table 1809.7 of the 2019 CBC.
**To be determined after rough grading, if necessary

It should be noted that the criteria provided are based on soil support characteristics only. The structural engineer should design the slab and beam reinforcement based on actual loading conditions.

The following criteria for design of foundations are preliminary and should be re-evaluated based on the results additional laboratory testing of samples obtained at/near finish pad grade.

5.3.1.1 An allowable bearing capacity of 2,000 pounds per square foot (psf) may be used for design of continuous and perimeter footings 18 inches deep and 12 inches wide, and pad footings 24 inches square and 18 inches deep. This allowable soil bearing capacity may be increased by 300 psf for each additional foot of footing depth and 300 psf for each additional foot of footing width to a maximum value of 3,000 psf. An increase of one-third may be applied when considering short-term live loads (e.g., seismic and wind loads).

5.3.1.2 Structural foundations should be designed in accordance with the 2019 CBC, and to withstand a total static settlement of 1 inch and maximum differential static settlement of one-half of the total settlement over a horizontal distance of 40 feet.

5.3.1.3 The passive earth pressure may be computed as an equivalent fluid having a density of 300 psf per foot of depth, to a maximum earth pressure of 3,000 psf for footings founded on engineered fill or competent native soil. A coefficient of friction between soil and concrete of 0.35 may be used with dead load forces. Passive pressure and

frictional resistance may be combined without reduction. The upper one foot of soil should be ignored in the passive pressure calculations unless the surface is covered with pavements.

5.3.1.4 A grade beam, a minimum of 12 inches wide and 18 inches deep, should be utilized across large entrances. The base of the grade beam should be at the same elevation as the bottom of the adjoining footings.

5.3.1.5 A moisture and vapor retarding system should be placed below slabs-on-grade where moisture migration through the slab is undesirable. Guidelines for these are provided in the 2019 California Green Building Standards Code (CALGreen) Section 4.505.2, the 2019 CBC Section 1907.1 and ACI 360R-10. The vapor retarder design and construction should also meet the requirements of ASTM E 1643. A portion of the design should be the implementation of a moisture vapor retardant membrane.

It should be realized that the effectiveness of the vapor retarding membrane can be adversely impacted as a result of construction related punctures (e.g., stake penetrations, tears, punctures from walking on the vapor retarder placed atop the underlying aggregate layer, etc.). These occurrences should be limited as much as possible during construction. Thicker membranes are generally more resistant to accidental puncture than thinner ones. Products specifically designed for use as moisture/vapor retarders may also be more puncture resistant. Although the CBC specifies a 6-mil vapor retarder membrane, it is GeoTek's opinion that a minimum 10 mil thick membrane with joints properly overlapped and sealed should be considered, unless otherwise specified by the slab design professional. The membrane should consist of Stego wrap or the equivalent.

Moisture and vapor retarding systems are intended to provide a certain level of resistance to vapor and moisture transmission through the concrete, but do not eliminate it. The acceptable level of moisture transmission through the slab is to a large extent based on the type of flooring used and environmental conditions. Ultimately, the vapor retarding system should be comprised of suitable elements to limited migration of water and reduce transmission of water vapor through the slab to acceptable levels. The selected elements should have suitable properties (i.e., thickness, composition, strength, and permeability) to achieve the desired performance level.

Moisture retarders can reduce, but not eliminate, moisture vapor rise from the underlying soils up through the slab. Moisture retarder systems should be designed

and constructed in accordance with applicable American Concrete Institute, Portland Cement Association, Post-Tensioning Concrete Institute, ASTM and California Building Code requirements and guidelines.

GeoTek recommends that a qualified person, such as the flooring contractor, structural engineer, architect, and/or other experts specializing in moisture control within the building be consulted to evaluate the general and specific moisture and vapor transmission paths and associated potential impact on the proposed construction. That person (or persons) should provide recommendations relative to the slab moisture and vapor retarder systems and for migration of potential adverse impact of moisture vapor transmission on various components of the structures, as deemed appropriate.

In addition, the recommendations in this report and GeoTek's services in general are not intended to address mold prevention; since GeoTek, along with geotechnical consultants in general, do not practice in the area of mold prevention. If specific recommendations addressing potential mold issues are desired, then a professional mold prevention consultant should be contacted.

5.3.1.6 It is recommended that control joints be placed in concrete slabs in two directions spaced approximately 24 to 36 times the thickness of the slab in inches. These joints are a widely accepted means to control cracks and should be reviewed by the project structural engineer.

5.3.2 Miscellaneous Foundation Recommendations

5.3.2.1 To reduce moisture penetration beneath the slab on grade areas, utility trench excavations should be backfilled with engineered fill, lean concrete or concrete slurry where they intercept the perimeter footing or thickened slab edge.

5.3.2.2 Soils from the footing excavations should not be placed in the slab-on-grade areas unless properly compacted and tested. The excavations should be free of loose/sloughed materials and be neatly trimmed at the time of concrete placement.

5.3.3 Foundation Setbacks

Minimum setbacks for all foundations should comply with the 2019 CBC or City of Menifee requirements, whichever is more stringent. Improvements not conforming to these setbacks are subject to the increased likelihood of excessive lateral movements and/or differential settlements. If large enough, these movements can compromise the integrity of the

improvements. The top outside edge of all footings should be set back a minimum of H/3 (where H is the slope height) from the face of any descending slope. The setback should be at least five feet and need not exceed 40 feet.

5.3.4 Soil Corrosivity

The soil resistivity at this site was tested in the laboratory on a sample collected during the field investigation. The results of the testing indicate that the on-site soils are considered "corrosive" (4,221 ohm-cm) (Roberge, 2000) to buried ferrous metal in accordance with current standards used by corrosion engineers. Recommendations for protection of buried ferrous metal should be provided by a corrosion engineer. Additional corrosion testing should be performed at the time of site grading to assess the corrosion of potential of the as-graded soils.

5.3.5 Soil Sulfate Content

The sulfate content was determined in the laboratory on a sample collected during the field investigation. The results indicate that the water-soluble sulfate result is less than 0.1 percent by weight, which is considered "negligible" as per Table 4.2.1 of ACI 318. Based on the test results and Table 4.3.1 of ACI 318, no special recommendations for concrete are required for this project due to soil sulfate exposure.

5.4 RETAINING AND GARDEN WALL DESIGN AND CONSTRUCTION

5.4.1.1 General Design Criteria

Recommendations presented in this report apply to typical masonry or concrete vertical retaining walls to a maximum height of up to six (6) feet. Additional review and recommendations should be requested for higher walls. These are typical design criteria and are not intended to supersede the design by the structural engineer.

Retaining wall foundations should be embedded a minimum of 18 inches into engineered fill. Retaining wall foundations should be designed in accordance with Section 5.3 of this report. Structural needs may govern and should be evaluated by the project structural engineer.

All earth retention structure plans, as applicable, should be reviewed by this office prior to finalization.

Earthwork considerations, site clearing and remedial earthwork for all earth retention structures should meet the requirements of this report, unless specifically provided otherwise, or more stringent requirements or recommendations are made by the designer. The backfill

material placement for all earth retention structures should meet the requirement of Section 5.2.4 in this report.

In general, cantilever earth retention structures, which are designed to yield at least 0.001H, where H is equal to the height of the earth retention structure, may be designed using the "active" condition. Rigid earth retention structures (including but not limited to rigid walls, and walls braced at top, such as typical basement walls) should be designed using the "at-rest" condition.

In addition to the design lateral forces due to retained earth, surcharges due to improvements, such as an adjacent building or traffic loading, should be considered in the design of the earth retention structures. Loads applied within a 1:1 (horizontal:vertical) projection from the surcharge on the stem of the earth retention structure should be considered in the design.

Final selection of the appropriate design parameters should be made by the designer of the earth retention structures.

5.4.1.2 Cantilevered Walls

The recommendations presented below are for cantilevered retaining walls up to six (6) feet high. Active earth pressure may be used for retaining wall design, provided the top of the wall is not restrained from minor deflections. An equivalent fluid pressure approach may be used to compute the horizontal pressure against the wall. Appropriate fluid unit weights are given below for specific slope gradients of the retained material. These do not include other superimposed loading conditions such as traffic, structures, seismic events, or adverse geologic conditions.

ACTIVE EARTH PRESSURES	
Surface Slope of Retained Materials (horizontal:vertical)	Equivalent Fluid Pressure (pcf) Select Backfill* and Native Soils
Level	40
2:1	65

*The design pressures assume the backfill material has an expansion index less than or equal to 20. Backfill zone includes area between back of the wall to a plane (1:1 horizontal : vertical) up from bottom of the wall foundation (on the backside of the wall) to the ground surface.

For walls with a retained height greater than 6 feet, an incremental seismic pressure should be included into the wall design. Where needed, it is recommended that an equivalent fluid pressure of 20 pcf be included into the wall design to account for seismic loading conditions. This pressure may be applied as an inverted triangular distribution.

5.4.1.3 Retaining Wall Backfill and Drainage

The wall backfill should also include a minimum one (1) foot wide section of ¾- to 1-inch clean crushed rock (or an approved equivalent). The rock should be placed immediately adjacent to the back of the wall and extend up from a back drain to within approximately 24 inches of the finish grade. The upper 24 inches should consist of compacted on-site materials. The rock should be separated from the earth with filter fabric. The presence of other materials might necessitate revision to the parameters provided and modification of the wall designs. The backfill materials should be placed in lifts no greater than eight (8) inches in thickness and compacted to a minimum of 90% relative compaction as determined by ASTM D 1557 test procedures. Proper surface drainage needs to be provided and maintained.

As an alternative to the drain, rock and fabric, a pre-manufactured wall drainage product (example: Mira Drain 6000 or approved equivalent) may be used behind the retaining wall. The wall drainage product should extend from the base of the wall to within two (2) feet of the ground surface. The subdrain should be placed in direct contact with the wall drainage product.

Retaining walls should be provided with an adequate pipe and gravel back drain system to help prevent buildup of hydrostatic pressures. Backdrains should consist of a four (4)-inch diameter perforated collector pipe (Schedule 40, SDR 35, or approved equivalent) embedded in a minimum of one (1) cubic foot per linear foot of ¾- to 1-inch clean crushed rock or an approved equivalent, wrapped in filter fabric (Mirafi 140N or an approved equivalent). The drain system should be connected to a suitable outlet. Waterproofing of site walls should be performed where moisture migration through the walls is undesirable.

5.4.1.4 Restrained Retaining Walls

Retaining walls that will be restrained at the top that support level backfill or that have reentrant or male corners, should be designed for an equivalent at-rest fluid pressure of 65 pcf, plus any applicable surcharge loading. For areas of male or reentrant corners, the restrained wall design should extend a minimum distance of twice the height of the wall laterally from the corner, or a distance otherwise determined by the project structural engineer.

5.4.1.5 Other Design Considerations

- Wall design should consider the additional surcharge loads from superjacent slopes and/or footings, where appropriate.
- No backfill should be placed against concrete until minimum design strengths are evident by compression tests of cylinders.
- The retaining wall footing excavations, backcuts, and backfill materials should be approved by the project geotechnical engineer or their authorized representative.
- Positive separations should be provided in garden walls at horizontal distances not exceeding 20 feet.

5.5 CONCRETE CONSTRUCTION

5.5.1 General

Concrete construction should follow the 2019 CBC and ACI guidelines regarding design, mix placement and curing of the concrete. If desired, GeoTek could provide quality control testing of the concrete during construction.

5.5.2 Concrete Mix Design

As discussed in Section 5.3.5, no special recommendations for concrete are required for this project due to soil sulfate exposure. Additional testing should be performed during grading so that specific recommendations can be formulated based on the as-graded conditions.

5.5.3 Concrete Flatwork

Exterior concrete flatwork is often one of the most visible aspects of site development. They are typically given the least level of quality control, being considered "non-structural" components. Cracking of these features is common due to various factors. While cracking usually does not affect the structural performance of the concrete, it is unsightly. It is recommended that the same standards of care be applied to these features as to the structure itself.

Flatwork should consist of a minimum four-inch (actual) thick concrete and the use of temperature and shrinkage control reinforcement is suggested. The project structural engineer should provide final design recommendations.

5.5.4 Concrete Performance

Concrete cracks should be expected. These cracks can vary from sizes that are hairline to more than 1/8 inch in width. Most cracks in concrete while unsightly do not significantly impact long-term performance. While it is possible to take measures (proper concrete mix, placement, curing, control joints, etc.) to reduce the extent and size of cracks that occur, some cracking will occur despite the best efforts to minimize it. Concrete undergoes chemical processes that are dependent on a wide range of variables, which are difficult, at best, to control. Concrete, while seemingly a stable material, is subject to internal expansion and contraction due to external changes over time.

One of the simplest means to control cracking is to provide weakened control joints for cracking to occur along. These do not prevent cracks from developing; they simply provide a relief point for the stresses that develop. These joints are a widely accepted means to control cracks but are not always effective. Control joints are more effective the more closely spaced they are. GeoTek suggests that control joints be placed in two orthogonal directions and located a distance apart approximately equal to 24 to 36 times the slab thickness.

5.6 PLAN REVIEW AND CONSTRUCTION OBSERVATIONS

It is recommended that site grading, specifications, and foundation plans be reviewed by this office prior to construction to check for conformance with the recommendations of this report. It is also recommended that GeoTek representatives be present during site grading and foundation construction to observe and document for proper implementation of the geotechnical recommendations. The owner/developer should have GeoTek perform at least the following duties:

- Observe site clearing and grubbing operations for proper removal of all unsuitable materials.
- Observe and test bottom of removals prior to fill placement.
- Evaluate the suitability of on-site and import materials for fill placement and collect soil samples for laboratory testing where necessary.
- Observe the fill for uniformity during placement, including utility trench excavation backfill. Also, test the fill for density, relative compaction and moisture content.
- Observe and probe foundation excavations to confirm suitability of bearing materials with respect to density.

If requested, a construction observation and compaction report can be provided by GeoTek which can comply with the requirements of the governmental agencies having jurisdiction over

the project. It is recommended that these agencies be notified prior to commencement of construction so that necessary grading permits can be obtained.

6. INTENT

It is the intent of this report to aid in the design and construction of the proposed development. Implementation of the advice presented in this report is intended to reduce risk associated with construction projects. The professional opinions and geotechnical advice contained in this report are not intended to imply total performance of the project or guarantee that unusual or variable conditions will not be discovered during or after construction.

The scope of GeoTek's evaluation is limited to the area explored that is shown on the Boring Location Map (Figure 2). This evaluation does not and should in no way be construed to encompass any areas beyond the specific area of the proposed construction as indicated to GeoTek by the client. Further, no evaluation of any existing site improvements is included. The scope is based on GeoTek's understanding of the project and the client's needs, GeoTek's proposal (Proposal No. P-1106121-CR) dated November 19, 2021 and geotechnical engineering standards normally used on similar projects in this region.

7. LIMITATIONS

GeoTek's findings are based on site conditions observed and the stated sources. Thus, GeoTek's comments are professional opinions that are limited to the extent of the available data.

GeoTek has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering at this time and location and science professions currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report.

Since GeoTek's recommendations are based on the site conditions observed and encountered at the stated times and laboratory testing. Thus, GeoTek's conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice

and no warranty of any kind is expressed or implied. Standards of care/practice are subject to change with time.

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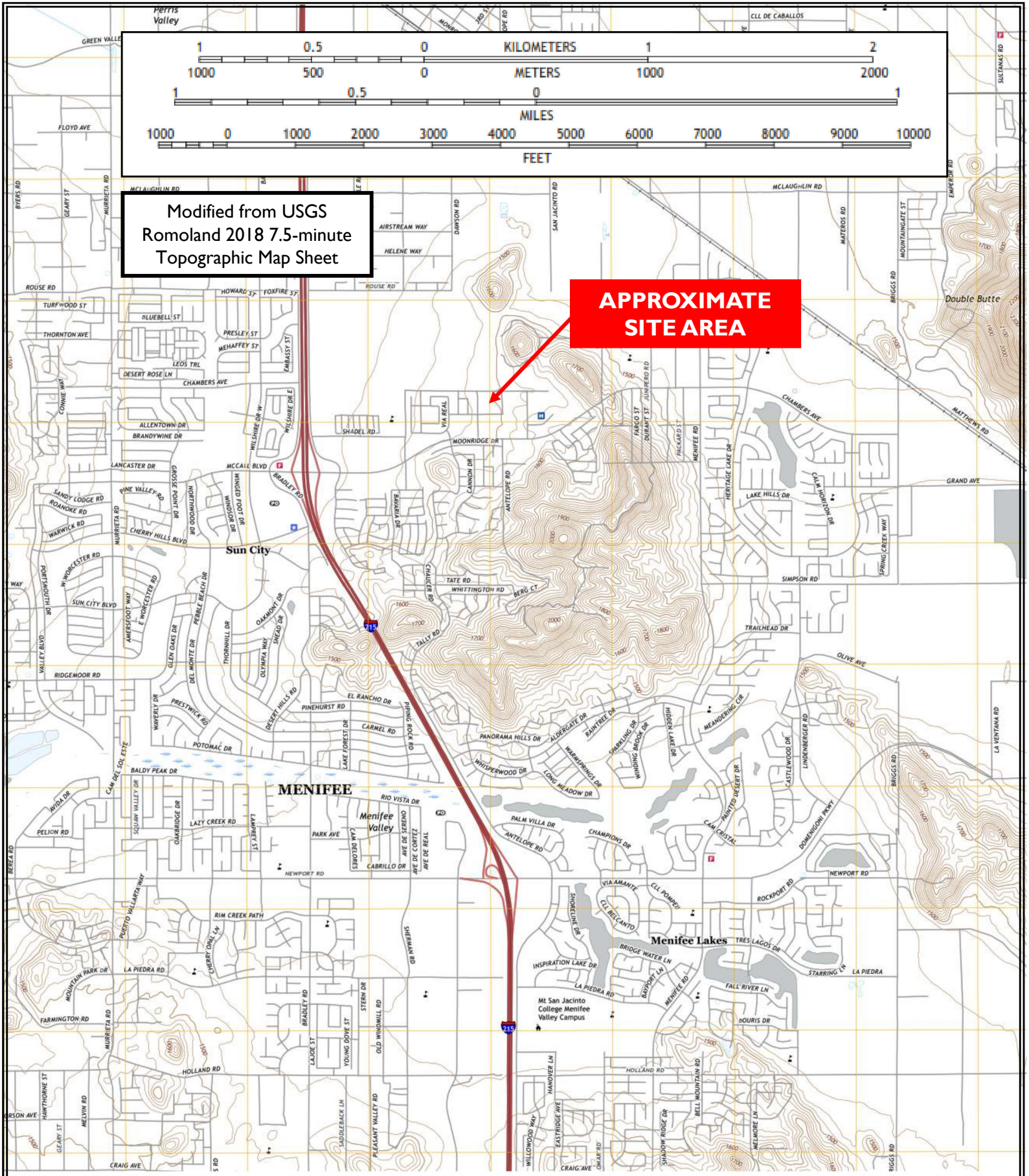
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Empire Construction Management
Cypress Sands Apartment Project
APN 333-050-034
Menifee, Riverside County, California

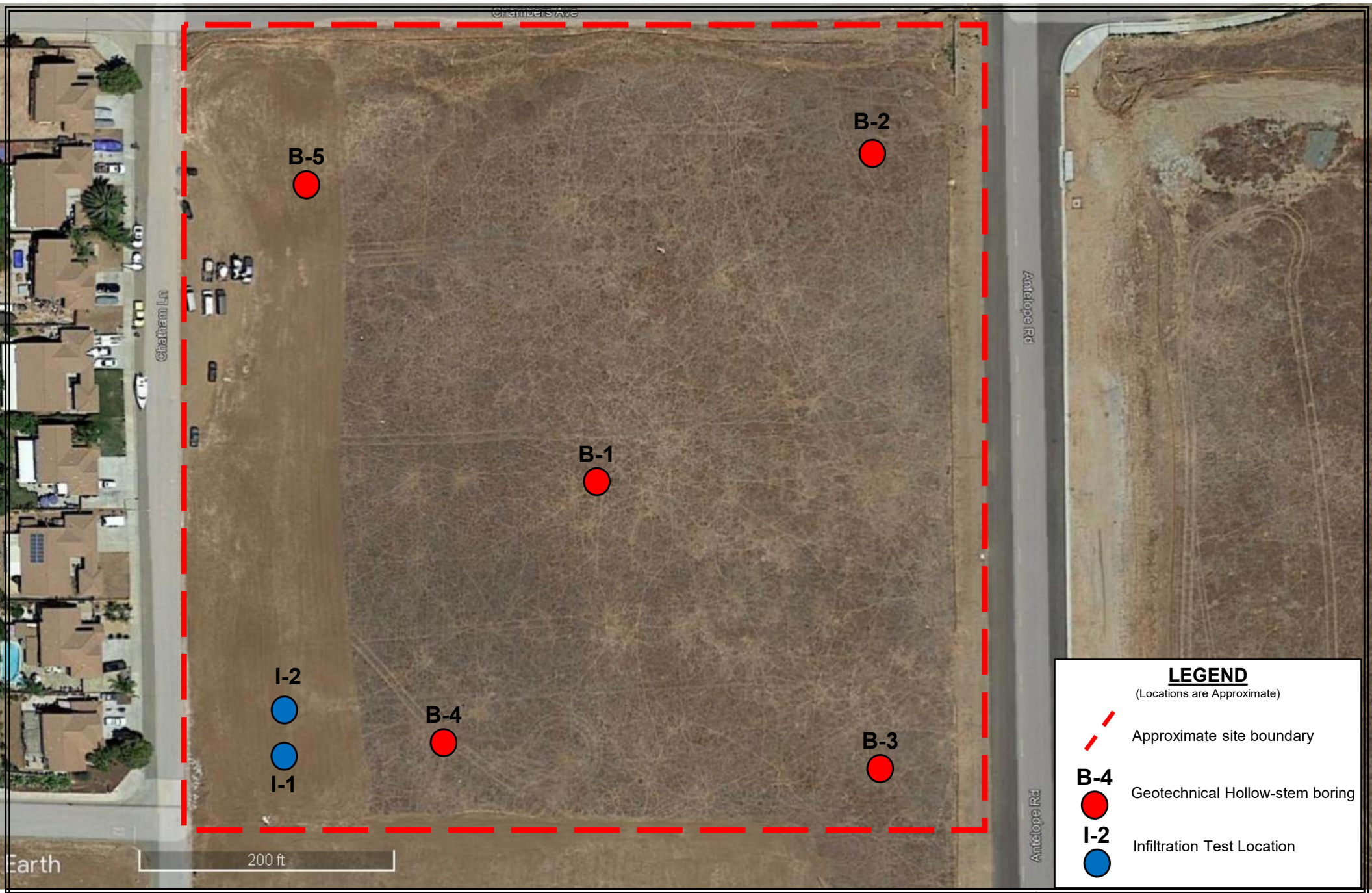
Project No. 2978-CR

NORTH

Figure 1

Site Location Map

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Empire Construction Management
Cypress Sands Apartment Project
APN 333-050-034
Menifee, Riverside County, California

Project No. 2978-CR

NORTH

Figure 2

Boring Location Map

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APPENDIX A

LOGS OF EXPLORATORY BORINGS

Proposed Cypress Sands Apartment Project
Chambers Avenue and Antelope Road
Menifee, Riverside County, California
Project No. 2978-CR

GEOTEK

A - FIELD TESTING AND SAMPLING PROCEDURES

The Modified Split-Barrel Sampler (Ring)

The Ring sampler is driven into the ground at various depths in accordance with ASTM D 3550 test procedures. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sampler is typically driven into the ground 12 or 18 inches with a 140-pound hammer free falling from a height of 30 inches. Blow counts are recorded for every 6 inches of penetration as indicated on the log of boring. The samples are removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

Bulk Samples (Large)

These samples are normally large bags of earth materials over 20 pounds in weight collected from the field by means of hand digging or exploratory cuttings.

Bulk Samples (Small)

These are plastic bag samples which are normally airtight and contain less than 5 pounds in weight of earth materials collected from the field by means of hand digging or exploratory cuttings. These samples are primarily used for determining natural moisture content and classification indices.

B - BORING LOG LEGEND

The following abbreviations and symbols often appear in the classification and description of soil and rock on the log of borings:

SOILS

USCS	Unified Soil Classification System
f-c	Fine to coarse
f-m	Fine to medium

GEOLOGIC

B: Attitudes	Bedding: strike/dip
J: Attitudes	Joint: strike/dip
C: Contact line	
……..	Dashed line denotes USCS material change
———	Solid Line denotes unit / formational change
———	Thick solid line denotes end of boring

(Additional denotations and symbols are provided on the boring logs)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/6 in.	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-1 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Alluvial Fan Deposits:			
		15 30 50	R1	SM/ML	Silty f SAND to Sandy SILT, red-brown, moist, very dense to hard	6.9		
		50-6"	R2			8.3	111.9	
5		20 30 42	R3	SM	Silty f-c SAND, red-brown, moist, dense	9.7	113.4	
		35 50-4"	R4	ML	Sandy SILT, red-brown, moist, hard			
10		14 23 45	R5		Sandy SILT, with clay, light red-brown, moist, hard	20.1	100.8	
15		50-4"	R6	ML/SM	Sandy SILT to Silty f SAND, with clay, light red-brown, moist, hard to very dense			
20		50-5"	R7	SM	Silty f-c SAND, light red-brown to grey-brown, moist, very dense	18.6	116.7	
25		15 50-6"	S1					
30		30 50-5"	S2		with clay	15.3		

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/6 in.	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-1 (cont.) / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Alluvial Fan Deposits (cont.):			
35		12 21 21	S3	SM	Silty f-c SAND, with clay, red-brown, moist, dense **Water seepage at 35.6 feet**	18.7		
40		20 50-6"	S4	SC	Clayey f-c SAND, light grey, very moist, very dense			
45		50-6"	S5	SM/ML	Silty f SAND to Sandy SILT, light grey, moist, very dense to hard	16.8		
50		25 50-6"	S6	SM	Silty f-c SAND, light grey, moist, very dense			
					BORING TERMINATED AT 51 FEET			
55					Water seepage encountered at 35.6 feet Boring backfilled with soil cuttings			
60								

LEGEND

Sample type: ---Ring; ---SPT; ---Small Bulk; ---Large Bulk; ---No Recovery; ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/6 in.	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-2 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Alluvial Fan Deposits:			
		19 29 43	R1	SM/ML	Silty f SAND to Sandy SILT, red-brown, moist, dense to hard	7.3	106.2	
5		35 50-6"	R2	SM	Silty f SAND, some gravel, red-brown, moist, very dense	9.5	105.1	
		13 18 30	R3		Silty f-c SAND, with clay, red-brown, moist, dense	13.5	108.3	
10		27 50-6"	R4		Silty f-c SAND, light grey-brown, moist, very dense			
15		50-6"	R5		Silty f-c SAND, light red-brown, moist, very dense	16.8	109	
20		50-6"	R6		**BORING TERMINATED AT 20.5 FEET**			
					No groundwater encountered Boring backfilled with soil cuttings			
25								
30								

LEGEND

Sample type: ---Ring; ---SPT; ---Small Bulk; ---Large Bulk; ---No Recovery; ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

BORING NO.: B-3

Depth (ft)	Sample Type	Blows/6 in.	Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Water Content (%)	Dry Density (pcf)	Others
					Very Old Alluvial Fan Deposits:			
		12 15 15	R1	ML	Sandy SILT, red-brown, moist, very stiff	5.2	97.8	HC
		12 20 18	R2	SM	Silty f SAND, red-brown, moist, medium dense	7.3	104.0	SR
5		9 18 33	R3	CL	Sandy CLAY, red-brown, moist, hard	14.2	120.5	
		36 50-3"	R4	SM	Silty f-c SAND, with gravel, red-brown, moist, very dense	8.0	108.5	
10		27 50-4"	R5					
15		50-5"	R6		Silty f-c SAND, red-brown, moist, very dense			
20		50-4"	R7		brown	6.2		
					BORING TERMINATED AT 20.5 FEET			
					No groundwater encountered Boring backfilled with soil cuttings			
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

BORING NO.: B-4

Depth (ft)	Sample Type	Blows/6 in.	Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Water Content (%)	Dry Density (pcf)	Others
					Very Old Alluvial Fan Deposits:			
		14 24 33	R1	SM	Silty f-c SAND, red-brown, moist, dense	9.8	114.6	HC
		18 50-6"	R2		with gravel	10.3	114.2	
5		50-6"	R3			11.9	112.2	
		23 50-5"	R4	SM/ML	Silty f SAND to Sandy SILT, red-brown, moist, very dense to hard	16.2	112.5	
10								
15		50-6"	R5		brown			
20		25 50-3"	R6	SM	Silty f-c SAND, red-brown, moist, very dense	14.4	114.1	
					BORING TERMINATED AT 21 FEET			
					No groundwater encountered Boring backfilled with soil cuttings			
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/6 in.	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-5 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Alluvial Fan Deposits:			
		5 12 24	R1	ML	Sandy SILT, dark red-brown, very moist, very stiff	13.7	120.1	
		12 22 22	R2	SC/CL	Clayey f SAND to Sandy CLAY, red-brown, moist, medium dense to very stiff	13.5	113.00	MD, EI, SH
5		12 20 30	R3	ML/SM	Sandy SILT to Silty f SAND, red-brown, moist, hard to dense	12.3	118.0	HC
		12 22 45	R4	SC/CL	Clayey f SAND to Sandy CLAY, red-brown, moist, dense to hard	15.1	117.0	
10		8 18 20	R5					
15		25 50-6"	R6	SM	Silty f-c SAND, red-brown, moist, very dense	12.1	118.3	
20		50-3"	R7		with gravel			
					BORING TERMINATED AT 20.5 FEET			
					No groundwater encountered Boring backfilled with soil cuttings			
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/6 in.	SAMPLES: Sample Number	USCS Symbol	BORING NO.: I-1 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Alluvial Fan Deposits:			
				ML/SM	Sandy SILT to Silty f SAND, red-brown, moist			
5					**BORING TERMINATED AT 5 FEET**			
					No groundwater encountered Boring set with pipe, sock, and gravel			
10								
15								
20								
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Empire Construction Management	**DRILLER:**	2R Drilling, Inc.	**LOGGED BY:**	JD
PROJECT NAME:	Cypress Sand Apartment	**DRILL METHOD:**	HSA	**OPERATOR:**	Jeff
PROJECT NO.:	2978-CR	**HAMMER:**	140 lbs - 30 in	**RIG TYPE:**	CME 75
LOCATION:	Menifee, CA			**DATE:**	12/16/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/6 in.	SAMPLES: Sample Number	USCS Symbol	BORING NO.: I-2 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Alluvial Fan Deposits:			
				ML/SM	Sandy SILT to Silty f SAND, red-brown, moist			
5					becomes light brown			
10					**BORING TERMINATED AT 10 FEET**			
					No groundwater encountered Boring set with pipe, sock, and gravel			
15								
20								
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

APPENDIX B

LABORATORY TEST RESULTS

Proposed Cypress Sands Apartment Project
Chambers Avenue and Antelope Road
Menifee, Riverside County, California
Project No. 2978-CR

GEOTEK

SUMMARY OF LABORATORY TESTING

Classification

Soils were visually classified in general accordance with the Unified Soil Classification System (ASTM Test Method D 2487). The soil classifications are shown on the Logs of Borings in Appendix A.

Direct Shear

Shear testing was performed in a direct shear machine of the strain-control type in general accordance with ASTM D 3080 test procedures. The rate of deformation was approximately 0.035 inch per minute. The sample was sheared under varying confining loads in order to determine the coulomb shear strength parameters, angle of internal friction and cohesion. The tests were performed on soil samples remolded to approximately 90 percent of maximum dry density as determined by ASTM D 1557 test procedures. The shear test results are presented in Appendix B.

Expansion Index

Expansion Index testing was performed one soil sample collected during the subsurface exploration. Testing was performed in general accordance with ASTM D 4829 test procedures. The results of the testing are provided below.

Boring No.	Depth (ft.)	Description	Expansion Index	Classification
B-5	0-5	Clayey Silt (ML)	69	"Medium"

In-Situ Moisture and Density

The natural water content of sampled soils was determined in general accordance with ASTM D 2216 test procedures on samples of the materials recovered during the subsurface exploration. In addition, in-place dry density of the sampled soils was determined in general accordance with ASTM D 2937 test procedures on relatively undisturbed samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the Logs of Borings in Appendix A.

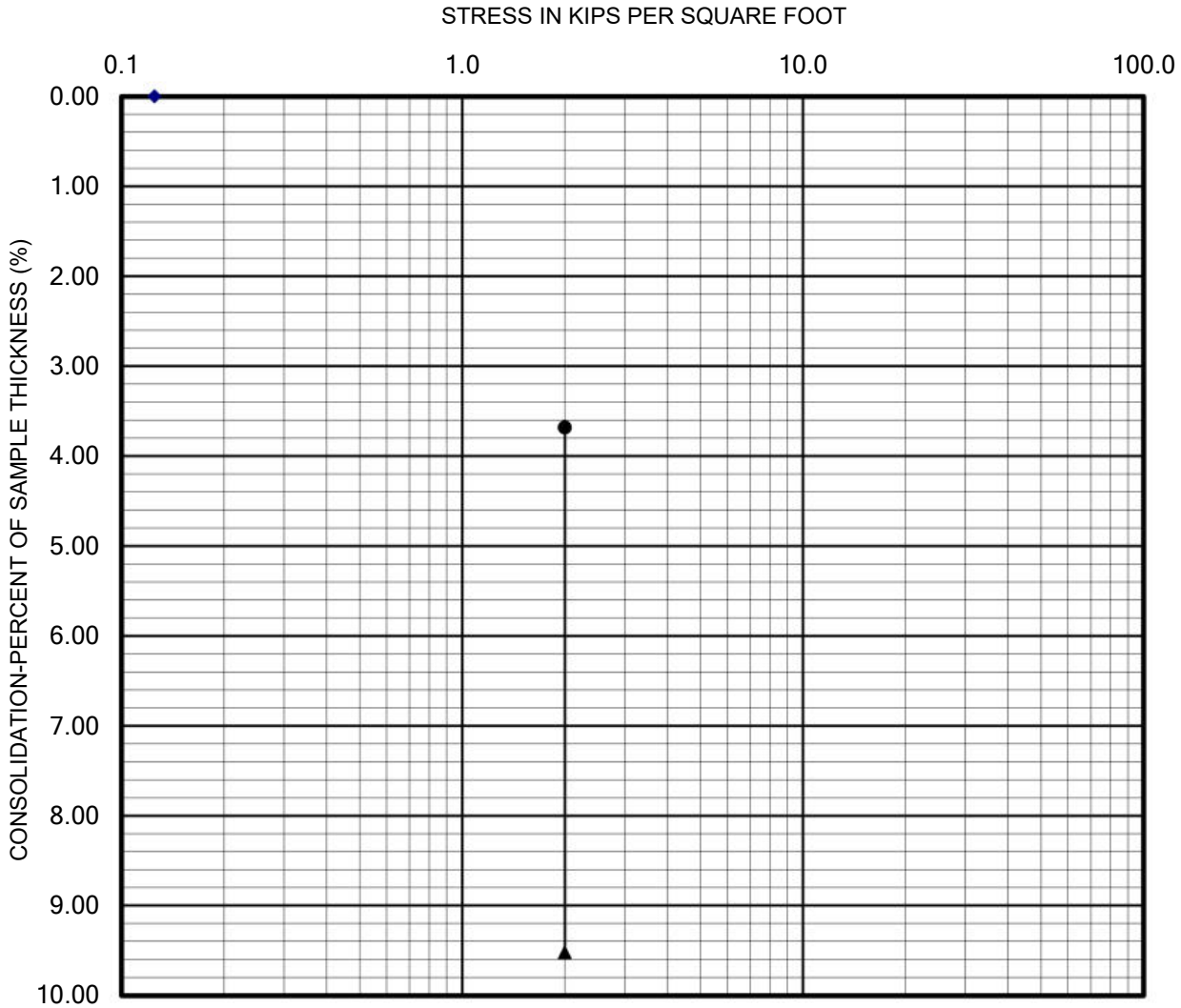
Moisture-Density Relationship

Laboratory testing was performed on a bulk sample of the site soils collected during the subsurface exploration. The laboratory maximum dry density and optimum moisture content was determined in general accordance with ASTM D 1557 test procedures. The results are presented in Appendix B.

Sulfate Content, Resistivity and Chloride Content

Testing to determine the water-soluble sulfate content was performed in general accordance with ASTM D4327 test procedures. Resistivity testing was completed in general accordance with ASTM G187 test procedures. Testing to determine the chloride content was performed in general accordance with ASTM D4327 test procedures. The results of the testing are provided in Appendix B.

Boring #	Depth (ft.)	pH ASTM D4972	Chloride ASTM D4327 (mg/kg)	Sulfate ASTM D4327 (% by weight)	Resistivity ASTM G187 (ohm-cm)
B-3	0-5	8.4	13.6	0.0027	4,221



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

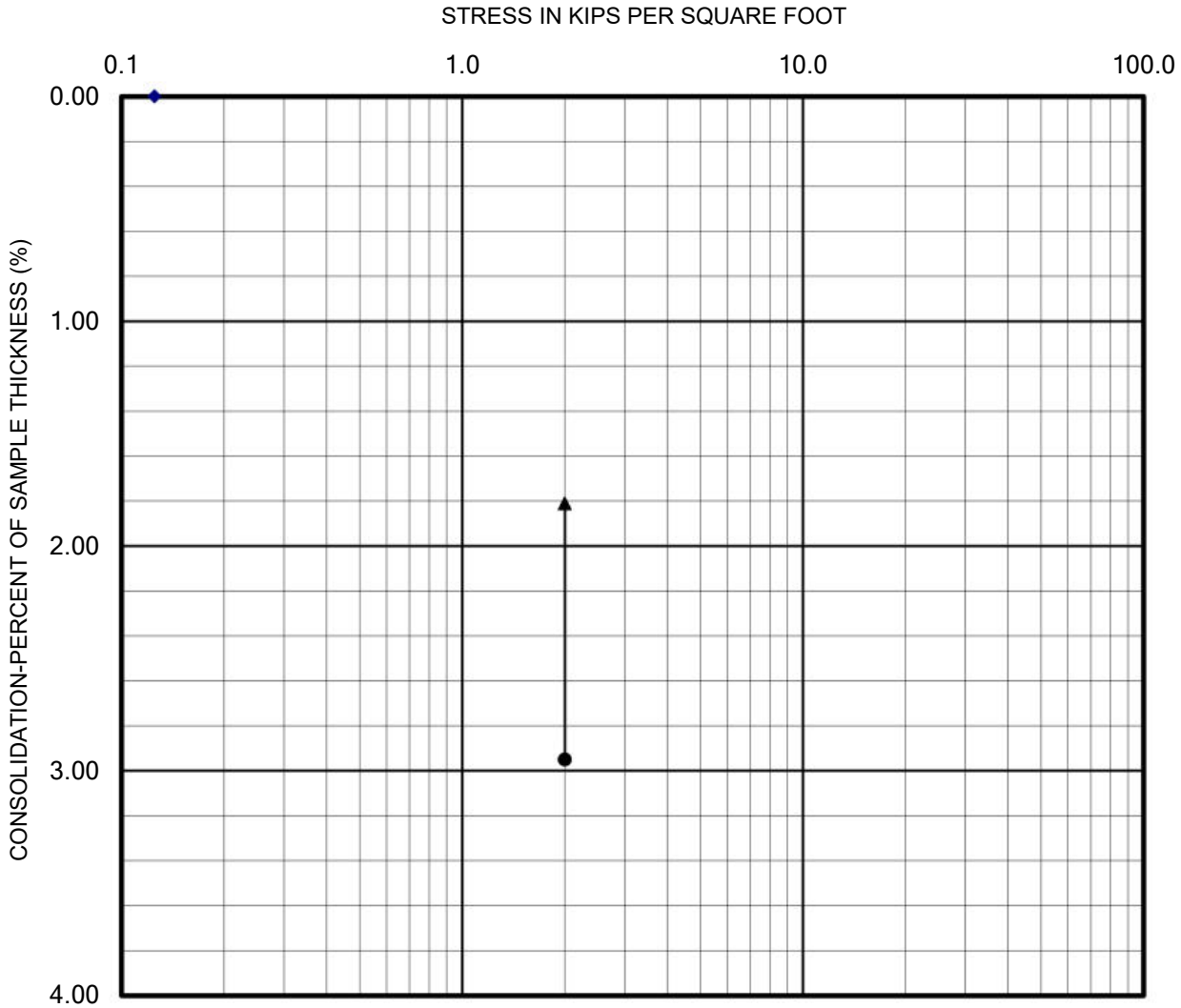
CHECKED BY: DA	Lab: Corona
PROJECT NO.: 2978-CR	Date: 12/23/21

COLLAPSE REPORT

Sample: B-3 @ 1 feet

Cypress Sands Apartments
Menifee, California

Plate B-1



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

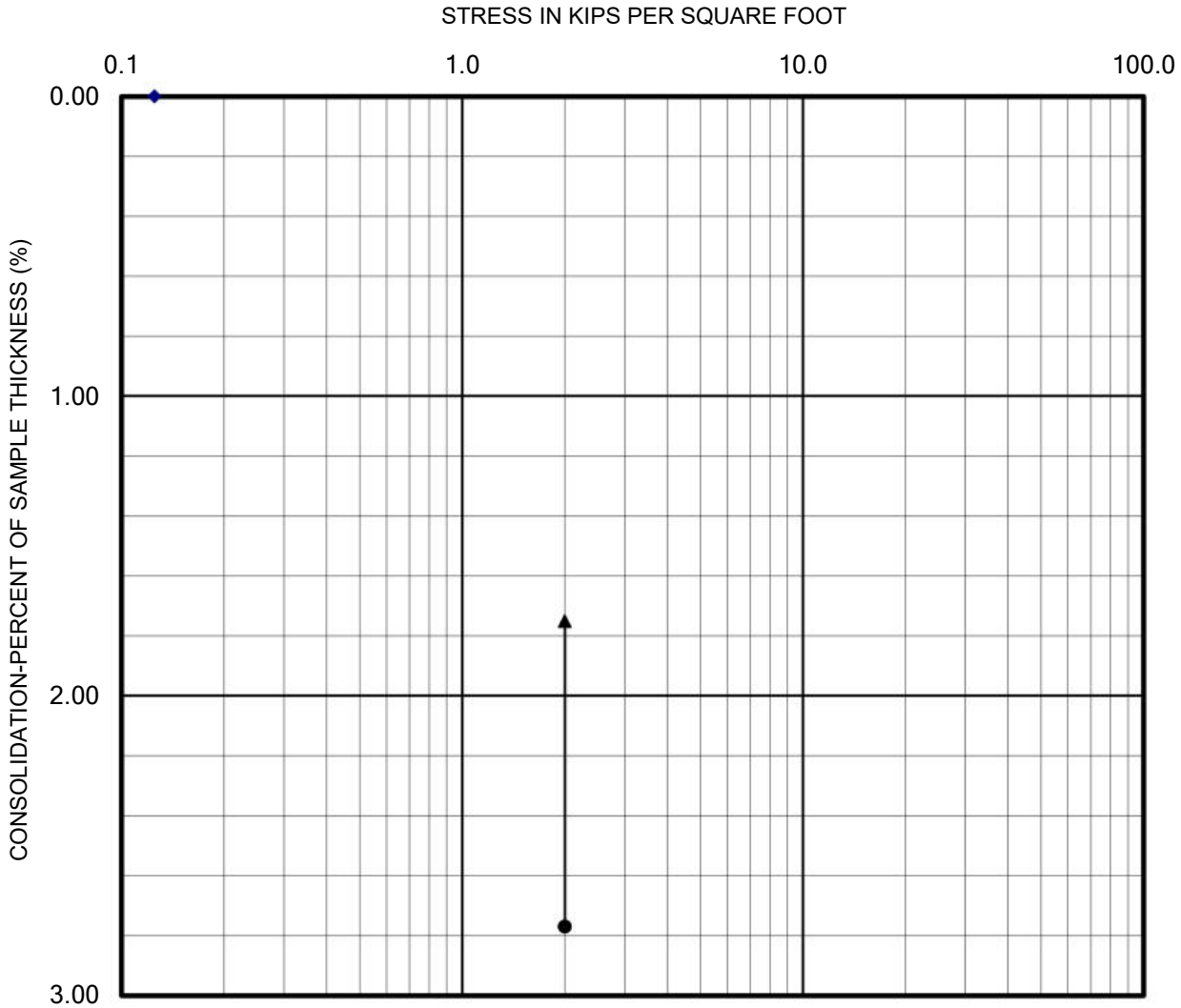
CHECKED BY: DA	Lab: Corona
PROJECT NO.: 2978-CR	Date: 12/23/21

COLLAPSE REPORT

Sample: B-4 @ 2 feet

Cypress Sands Apartments
Menifee, California

Plate B-2



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

CHECKED BY: DA	Lab: Corona
PROJECT NO.: 2978-CR	Date: 12/23/21

COLLAPSE REPORT

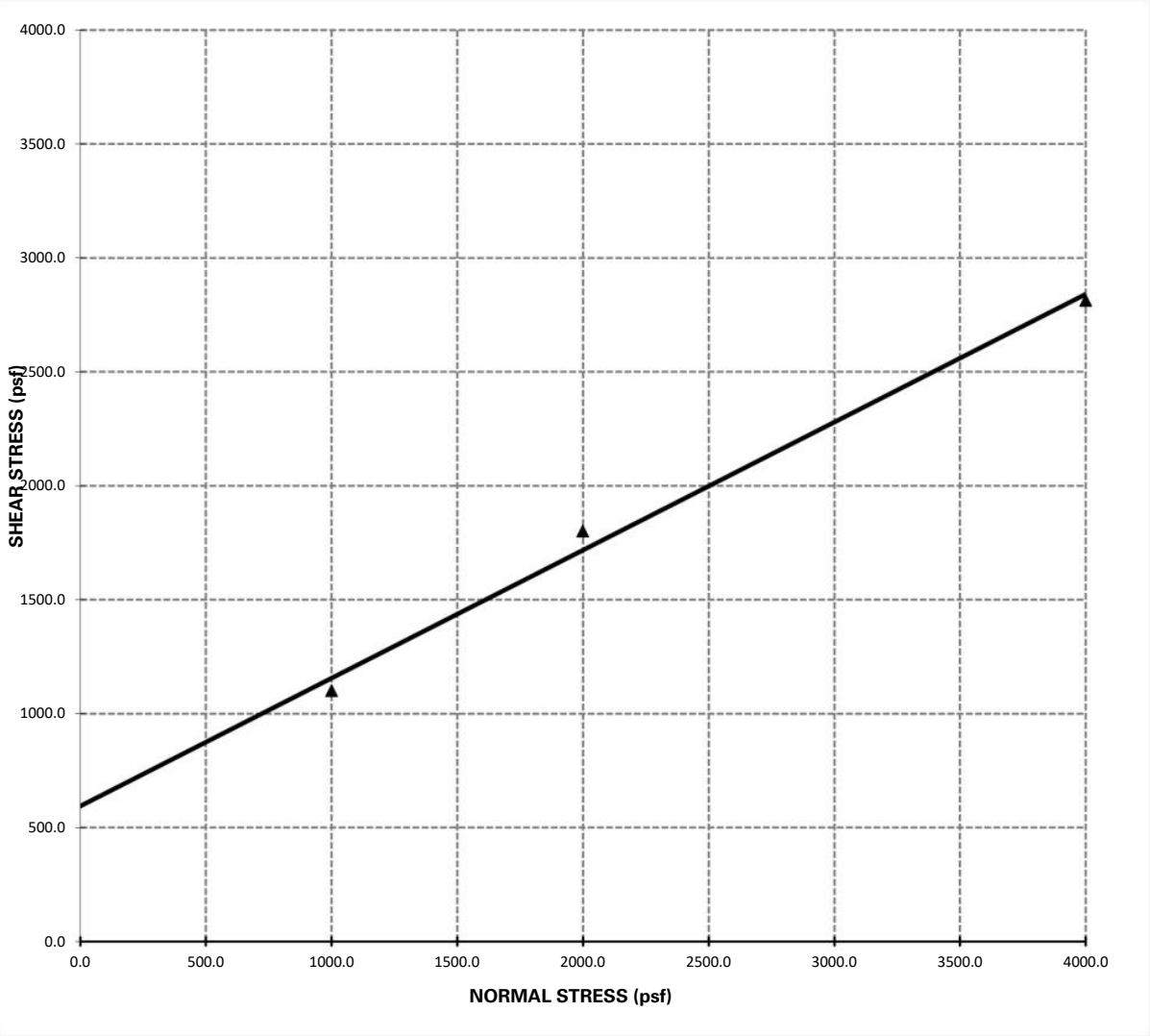
Sample: B-5 @ 5 feet

Cypress Sands Apartments
Menifee, California

Plate B-3

DIRECT SHEAR TEST

Project Name:	Cypress Sand Apartments	***Sample Location:***	B-5 @ 0-5 feet
Project Number:	2978-CR	***Date Tested:***	12/28/2021



Shear Strength: **Φ = 29 °, C = 594 psf**

Notes: 1 - The soil specimen used in the shear box was a ring sample remolded to approximately 90% relative compaction from a bulk sample collected during the field investigation.

2 - The above reflect direct shear strength at saturated conditions.

3 - The tests were run at a shear rate of 0.01 in/min.

GEOTEK

EXPANSION INDEX TEST

(ASTM D4829)

Client:	Empire Construction Management	***Tested/ Checked By:***	BL Lab No Corona
Project Number:	2978-CR	***Date Tested:***	12/28/2021
Project Location:	Cypress Sand Apartments, Menifee	***Sample Source:***	B-5 @ 0-5 feet
		Sample Description:	

Ring #:_____ Ring Dia. : 4.01" Ring Ht. 1"

DENSITY DETERMINATION

A	Weight of compacted sample & ring (gm)	755.0
B	Weight of ring (gm)	370.0
C	Net weight of sample (gm)	**385.0**
D	Wet Density, lb / ft3 (C*0.3016)	**116.1**
E	Dry Density, lb / ft3 (D/1.F)	**104.2**

SATURATION DETERMINATION

F	Moisture Content, %	11.4
G	Specific Gravity, assumed	**2.70**
H	Unit Wt. of Water @ 20 °C, (pcf)	**62.4**
I	% Saturation	**49.9**

READINGS

DATE	TIME	READING	
12/28/2021		0.7180	Initial
12/28/2021		0.7160	10 min/Dry
12/29/2021		0.7850	Final

FINAL MOISTURE

Final Weight of wet sample & tare	% Moisture
808.5	**25.3**

EXPANSION INDEX = 69

GEOTEK

MOISTURE/DENSITY RELATIONSHIP

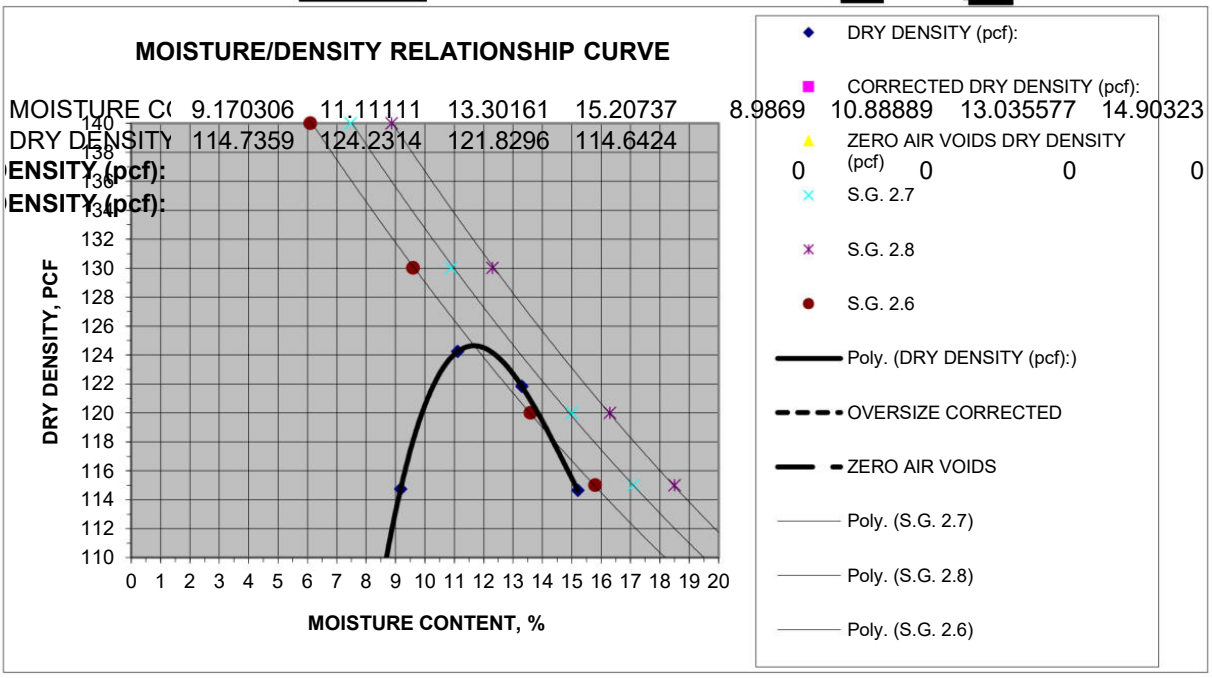
Client: Enterprise Construction Management
Project: Cypress Sand Apartments
Location: Menifee
Material Type: Gray brown silty sand with some clay
Material Supplier: -
Material Source: -
Sample Location: B-5 @ 0-5 feet
-
Sampled By: -
Received By: ADLC
Tested By: CB
Reviewed By: DA

Job No.: 2978-CR
Lab No.: Corona
Date Sampled: -
Date Received: -
Date Tested: 12/24/2021
Reviewed Date: 12/30/2021

Test Procedure: ASTM D1557 **Method:** A
Oversized Material (%): 2.0 **Correction Required:** [ ] yes [x] no

MOISTURE/DENSITY RELATIONSHIP CURVE

MOISTURE C(	9.170306	11.11111	13.30161	15.20737	8.9869	10.88889	13.035577	14.90323
DRY DENSITY	114.7359	124.2314	121.8296	114.6424				
ENSITY (pcf):					0	0	0	0
ENSITY (pcf):								



MOISTURE DENSITY RELATIONSHIP VALUES

Maximum Dry Density, pcf	124.5	**@ Optimum Moisture, %**	11.5
Corrected Maximum Dry Density, pcf		**@ Optimum Moisture, %**	

MATERIAL DESCRIPTION

Grain Size Distribution:

	% Gravel (retained on No. 4)
	% Sand (Passing No. 4, Retained on No. 200)
	% Silt and Clay (Passing No. 200)

Atterberg Limits:

	Liquid Limit, %
	Plastic Limit, %
	Plasticity Index, %

Classification:

Unified Soils Classification: _____

AASHTO Soils Classification: _____

Results Only Soil Testing for Cypress Sand Apartment, Menifee

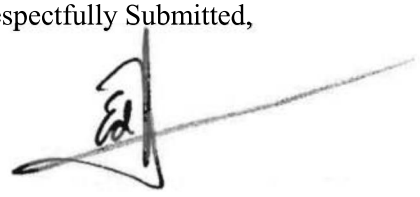
December 21, 2021

Prepared for:

Anna Scott
GeoTek, Inc.
1548 North Maple Street
Corona, CA 92280
ascott@geotekusa.com

Project X Job#: S211220B
Client Job or PO#: 2978-CR Empire Construction Management

Respectfully Submitted,



Eduardo Hernandez, M.Sc., P.E.
Sr. Corrosion Consultant
NACE Corrosion Technologist #16592
Professional Engineer
California No. M37102
ehernandez@projectxcorrosion.com



Soil Analysis Lab Results

Client: GeoTek, Inc.
Job Name: Cypress Sand Apartment, Menifee
Client Job Number: 2978-CR Empire Construction Management
Project X Job Number: S211220B
December 21, 2021

	Method	ASTM D4327		ASTM D4327		ASTM G187		ASTM D4972	ASTM G200	ASTM D4658	ASTM D4327	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D4327	ASTM D4327
Bore# / Description	**Depth**	**Sulfates** SO_4^{2-}		**Chlorides** Cl^-		**Resistivity** As Rec'd | Minimum		**pH**	**Redox**	**Sulfide** S^{2-}	**Nitrate** NO_3^-	**Ammonium** NH_4^+	**Lithium** Li^+	**Sodium** Na^+	**Potassium** K^+	**Magnesium** Mg^{2+}	**Calcium** Ca^{2+}	**Fluoride** F_2^-	**Phosphate** PO_4^{3-}
	(ft)	(mg/kg)	(wt%)	(mg/kg)	(wt%)	(Ohm-cm)	(Ohm-cm)		(mV)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2978 CR B-3	0-5	26.6	0.0027	13.6	0.0014	20,770	4,221	8.4	208	0.11	5.6	2.8	ND	63.6	4.6	18.0	31.3	5.7	3.2

Cations and Anions, except Sulfide and Bicarbonate, tested with Ion Chromatography
mg/kg = milligrams per kilogram (parts per million) of dry soil weight
ND = 0 = Not Detected | NT = Not Tested | Unk = Unknown
Chemical Analysis performed on 1:3 Soil-To-Water extract
PPM = mg/kg (soil) = mg/L (Liquid)

APPENDIX C

PERCOLATION DATA SHEETS & PORCHET CALCULATIONS

Proposed Cypress Sands Apartment Project
Chambers Avenue and Antelope Road
Menifee, Riverside County, California
Project No. 2978-CR

GEOTEK

PERCOLATION DATA SHEET

Project: SE CORNER CHATHAM LANE & CHAMBERS AVENUE, Job No.: 2978-CR.

Test Hole No.: I-1 Tested By: DVG, Date: 12/20,21/2021.

Depth of Hole As Drilled: 60" Before Test: 60" After Test: 60".

Reading No.	Time	Time Interval (Min)	Total Depth of Hole (Inches)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Rate (minutes per inch)	Comments
								PRESOAK 5 GAL 12/20/2021
	658		60	20				BEGIN 12/21/2021
	723	25			18	2		1ST 25 MIN.
	725		60	20				
	750	25			18	2		2ND 25 MIN.
	752		60	20				
	822	30			17 3/4	2 1/4		1ST 30 MIN.
	824		60	20				
	854	30			17 3/4	2 1/4		2ND 30 MIN.
	856		60	20				
	926	30			18	2		3RD 30 MIN.
	928		60	20				
	958	30			18	2		4TH 30 MIN.
	1000		60	20				
	1030	30			18 1/4	1 3/4		5TH 30 MIN.
	1032		60	20				
	1102	30			18 1/4	1 3/4		6TH 30 MIN.
	1104		60	20				
	1134	30			18 1/2	1 1/2		7TH 30 MIN.

PERCOLATION DATA SHEET

SE CORNER

Project: CHATHAM LANE & CHAMBERS AVENUE, **Job No.:** 2978-CR.

Test Hole No.: I-1 **Tested By:** DVG, **Date:** 12/20,21/2021.

Depth of Hole As Drilled: 60" **Before Test:** 60" **After Test:** 60".

Reading No.	Time	Time Interval (Min)	Total Depth of Hole (Inches)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Rate (minutes per inch)	Comments
	1136		60	20				
	1206	30			18 3/4	1 1/4		8TH 30 MIN.
	1208		60	20				
	1238	30			18 3/4	1 1/4		9TH 30 MIN.
	1240		60	20				
	110	30			18 3/4	1 1/4		10TH 30 MIN.
	112		60	20				
	142	30			19	1		11TH 30 MIN.
	144		60	20				
	214	30			19	1		12TH 30 MIN.

PERCOLATION DATA SHEET

Project: SE CORNER CHATHAM LANE & CHAMBERS AVENUE, Job No.: 2978-CR.

Test Hole No.: I-2 Tested By: DVG, Date: 12/20,21/2021.

Depth of Hole As Drilled: 120" Before Test: 120" After Test: 120".

Reading No.	Time	Time Interval (Min)	Total Depth of Hole (Inches)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Rate (minutes per inch)	Comments
								PRESOAK 5 GAL 12/20/2021
	705		120	20				BEGIN 12/21/2021
	730	25			17 3/4	2 1/4		1ST 25 MIN.
	732		120	20				
	757	25			17 3/4	2 1/4		2ND 25 MIN.
	759		120	20				
	829	30			17 1/2	2 1/2		1ST 30 MIN.
	831		120	20				
	901	30			17 3/4	2 1/4		2ND 30 MIN.
	903		120	20				
	933	30			17 3/4	2 1/4		3RD 30 MIN.
	935		120	20				
	1005	30			17 3/4	2 1/4		4TH 30 MIN.
	1007		120	20				
	1037	30			18	2		5TH 30 MIN.
	1039		120	20				
	1109	30			18	2		6TH 30 MIN.
	1111		120	20				
	1141	30			18 1/4	1 3/4		7TH 30 MIN.

PERCOLATION DATA SHEET

SE CORNER

Project: CHATHAM LANE & CHAMBERS AVENUE, Job No.: 2978-CR.

Test Hole No.: I-2 Tested By: DVG, Date: 12/20,21/2021.

Depth of Hole As Drilled: 120" Before Test: 120" After Test: 120".

Reading No.	Time	Time Interval (Min)	Total Depth of Hole (Inches)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Rate (minutes per inch)	Comments
	1143		120	20				
	1213	30			18 1/4	1 3/4		8TH 30 MIN.
	1215		120	20				
	1245	30			18 1/2	1 1/2		9TH 30 MIN.
	1247		120	20				
	117	30			18 1/2	1 1/2		10TH 30 MIN.
	119		120	20				
	149	30			18 1/2	1 1/2		11TH 30 MIN.
	151		120	20				
	221	30			18 3/4	1 1/4		12TH 30 MIN.

Client:	**Empire Construction Management**
Project:	**Cypress Sand Apartment Project**
Project No:	**2978-CR**
Date:	**12/21/2021**

Boring No. **I-1**

Percolation Rate (Porchet Method)

Time Interval, Δt =	30	min
Final Depth to Water, D_F =	41.0	in
Test Hole Radius, r =	4	in
Initial Depth to Water, D_O =	40	in
Total Test Hole Depth, D_T =	60	in

Equation - $I_t = \dfrac{\Delta H\ (60r)}{\Delta t\ (r+2H_{avg})}$

$H_O = D_T - D_O$ =	20	in
$H_F = D_T - D_F$ =	19	in
$\Delta H = \Delta D = H_O - H_F$ =	1	in
$H_{avg} = (H_O+H_F)/2$ =	19.5	in

I_t = 0.19 **Inches per Hour**

GEOTEK

Client:	**Empire Construction Management**
Project:	**Cypress Sand Apartment Project**
Project No:	**2978-CR**
Date:	**12/21/2021**

Boring No. **I-2**

Percolation Rate (Porchet Method)

Time Interval, Δt =	30	min
Final Depth to Water, D_F =	101.25	in
Test Hole Radius, r =	4	in
Initial Depth to Water, D_O =	100	in
Total Test Hole Depth, D_T =	120	in

Equation - $I_t = \dfrac{\Delta H\ (60r)}{\Delta t\ (r+2H_{avg})}$

$H_O = D_T - D_O$ =	20	in
$H_F = D_T - D_F$ =	18.75	in
$\Delta H = \Delta D = H_O - H_F$ =	1.25	in
$H_{avg} = (H_O+H_F)/2$ =	19.375	in

I_t = 0.23 **Inches per Hour**

GEOTEK

APPENDIX D

LIQUEFACTION ANALYSIS

Proposed Cypress Sands Apartment Project
Chambers Avenue and Antelope Road
Menifee, Riverside County, California
Project No. 2978-CR

GEOTEK

****
LIQUEFACTION ANALYSIS CALCULATION DETAILS

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Input File Name: UNTITLED
Title: Cypress Sands Apartment Project
Subtitle: Liquefaction Analysis

Input Data:
Surface Elev.=1495
Hole No.=B-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 30.00 ft
Water Table during In-Situ Testing= 35.60 ft
Max. Acceleration=0.55 g
Earthquake Magnitude=7.30
No-Liquefiable Soils: CL, OL are Non-Liq. Soil
1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=User)
10. Average two input data between two Depths: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	Gamma pcf	Fines %
1.00	40.00	132.00	50.00
3.00	100.00	121.00	50.00
5.00	45.00	124.00	25.00
7.50	100.00	124.00	55.00
10.00	43.00	121.00	55.00
15.00	100.00	124.00	50.00
20.00	100.00	138.00	25.00

25.00	100.00	138.00	25.00
30.00	100.00	138.00	25.00
35.00	42.00	138.00	25.00
40.00	100.00	138.00	40.00
45.00	100.00	138.00	50.00
50.00	100.00	138.00	25.00

Output Results:

Calculation segment, dz=0.050 ft

User defined Print Interval, dp=1.00 ft

Peak Ground Acceleration (PGA), a_max = 0.55g

CSR Calculation:

Depth	gamma	sigma	gamma'	sigma'	rd	mZ	a(z)	CSR	x fs1	=CSRfs
ft	pcf	atm	pcf	atm		g	g			
1.00	132.00	0.062	132.00	0.062	1.00	0.000	0.550	0.36	1.00	0.36
2.00	126.50	0.124	126.50	0.124	1.00	0.000	0.550	0.36	1.00	0.36
3.00	121.00	0.182	121.00	0.182	0.99	0.000	0.550	0.35	1.00	0.35
4.00	122.50	0.240	122.50	0.240	0.99	0.000	0.550	0.35	1.00	0.35
5.00	124.00	0.298	124.00	0.298	0.99	0.000	0.550	0.35	1.00	0.35
6.00	124.00	0.356	124.00	0.356	0.99	0.000	0.550	0.35	1.00	0.35
7.00	124.00	0.415	124.00	0.415	0.98	0.000	0.550	0.35	1.00	0.35
8.00	123.40	0.474	123.40	0.474	0.98	0.000	0.550	0.35	1.00	0.35
9.00	122.20	0.532	122.20	0.532	0.98	0.000	0.550	0.35	1.00	0.35
10.00	121.00	0.589	121.00	0.589	0.98	0.000	0.550	0.35	1.00	0.35
11.00	121.60	0.646	121.60	0.646	0.97	0.000	0.550	0.35	1.00	0.35
12.00	122.20	0.704	122.20	0.704	0.97	0.000	0.550	0.35	1.00	0.35
13.00	122.80	0.762	122.80	0.762	0.97	0.000	0.550	0.35	1.00	0.35
14.00	123.40	0.820	123.40	0.820	0.97	0.000	0.550	0.35	1.00	0.35

15.00	124.00	0.878	124.00	0.878	0.97	0.000	0.550	0.34	1.00	0.34
16.00	126.80	0.938	126.80	0.938	0.96	0.000	0.550	0.34	1.00	0.34
17.00	129.60	0.998	129.60	0.998	0.96	0.000	0.550	0.34	1.00	0.34
18.00	132.40	1.060	132.40	1.060	0.96	0.000	0.550	0.34	1.00	0.34
19.00	135.20	1.123	135.20	1.123	0.96	0.000	0.550	0.34	1.00	0.34
20.00	138.00	1.188	138.00	1.188	0.95	0.000	0.550	0.34	1.00	0.34
21.00	138.00	1.253	138.00	1.253	0.95	0.000	0.550	0.34	1.00	0.34
22.00	138.00	1.318	138.00	1.318	0.95	0.000	0.550	0.34	1.00	0.34
23.00	138.00	1.383	138.00	1.383	0.95	0.000	0.550	0.34	1.00	0.34
24.00	138.00	1.449	138.00	1.449	0.94	0.000	0.550	0.34	1.00	0.34
25.00	138.00	1.514	138.00	1.514	0.94	0.000	0.550	0.34	1.00	0.34
26.00	138.00	1.579	138.00	1.579	0.94	0.000	0.550	0.34	1.00	0.34
27.00	138.00	1.644	138.00	1.644	0.94	0.000	0.550	0.33	1.00	0.33
28.00	138.00	1.709	138.00	1.709	0.93	0.000	0.550	0.33	1.00	0.33
29.00	138.00	1.775	138.00	1.775	0.93	0.000	0.550	0.33	1.00	0.33
30.00	138.00	1.840	138.00	1.840	0.93	0.000	0.550	0.33	1.00	0.33
31.00	138.00	1.905	75.60	1.877	0.92	0.000	0.550	0.33	1.00	0.33
32.00	138.00	1.970	75.60	1.913	0.91	0.000	0.550	0.34	1.00	0.34
33.00	138.00	2.036	75.60	1.949	0.91	0.000	0.550	0.34	1.00	0.34
34.00	138.00	2.101	75.60	1.984	0.90	0.000	0.550	0.34	1.00	0.34
35.00	138.00	2.166	75.60	2.020	0.89	0.000	0.550	0.34	1.00	0.34
36.00	138.00	2.231	75.60	2.056	0.88	0.000	0.550	0.34	1.00	0.34
37.00	138.00	2.296	75.60	2.091	0.87	0.000	0.550	0.34	1.00	0.34
38.00	138.00	2.362	75.60	2.127	0.86	0.000	0.550	0.34	1.00	0.34
39.00	138.00	2.427	75.60	2.163	0.86	0.000	0.550	0.34	1.00	0.34

40.00	138.00	2.492	75.60	2.199	0.85	0.000	0.550	0.34	1.00 0.34
41.00	138.00	2.557	75.60	2.234	0.84	0.000	0.550	0.34	1.00 0.34
42.00	138.00	2.622	75.60	2.270	0.83	0.000	0.550	0.34	1.00 0.34
43.00	138.00	2.688	75.60	2.306	0.82	0.000	0.550	0.34	1.00 0.34
44.00	138.00	2.753	75.60	2.342	0.82	0.000	0.550	0.34	1.00 0.34
45.00	138.00	2.818	75.60	2.377	0.81	0.000	0.550	0.34	1.00 0.34
46.00	138.00	2.883	75.60	2.413	0.80	0.000	0.550	0.34	1.00 0.34
47.00	138.00	2.949	75.60	2.449	0.79	0.000	0.550	0.34	1.00 0.34
48.00	138.00	3.014	75.60	2.484	0.78	0.000	0.550	0.34	1.00 0.34
49.00	138.00	3.079	75.60	2.520	0.78	0.000	0.550	0.34	1.00 0.34
50.00	138.00	3.144	75.60	2.556	0.77	0.000	0.550	0.34	1.00 0.34

CSR is based on water table at 30.00 during earthquake

CRR Calculation from SPT or BPT data:

Depth	SPT	Cebs	Cr	sigma'	Cn	(N1)60	Fines	d(N1)60	(N1)60f	CRR7.5
ft				atm			%			
1.00	40.00	1.25	0.75	0.062	1.70	63.75	50.00	17.75	81.50	0.50
2.00	70.00	1.25	0.75	0.124	1.70	111.56	50.00	27.31	138.87	0.50
3.00	100.00	1.25	0.75	0.182	1.70	159.37	50.00	36.87	196.25	0.50
4.00	72.50	1.25	0.75	0.240	1.70	115.55	37.50	28.11	143.66	0.50
5.00	45.00	1.25	0.75	0.298	1.70	71.72	25.00	12.54	84.26	0.50
6.00	67.00	1.25	0.75	0.356	1.68	105.22	37.00	26.04	131.26	0.50
7.00	89.00	1.25	0.75	0.415	1.55	129.52	49.00	30.90	160.43	0.50
8.00	88.60	1.25	0.75	0.474	1.45	120.71	55.00	29.14	149.85	0.50

	9.00	65.80	1.25	0.85	0.532	1.37	95.89	55.00	24.18
120.07	0.50								
	10.00	43.00	1.25	0.85	0.589	1.30	59.53	55.00	16.91
76.43	0.50								
	11.00	54.40	1.25	0.85	0.646	1.24	71.89	54.00	19.38
91.27	0.50								
	12.00	65.80	1.25	0.85	0.704	1.19	83.33	53.00	21.67
104.99	0.50								
	13.00	77.20	1.25	0.85	0.762	1.15	93.98	52.00	23.80
117.77	0.50								
	14.00	88.60	1.25	0.85	0.820	1.10	103.96	51.00	25.79
129.75	0.50								
	15.00	100.00	1.25	0.95	0.878	1.07	126.70	50.00	30.34
157.04	0.50								
	16.00	100.00	1.25	0.95	0.938	1.03	122.63	45.00	29.53
152.16	0.50								
	17.00	100.00	1.25	0.95	0.998	1.00	118.86	40.00	28.77
147.63	0.50								
	18.00	100.00	1.25	0.95	1.060	0.97	115.34	35.00	27.71
143.04	0.50								
	19.00	100.00	1.25	0.95	1.123	0.94	112.04	30.00	22.00
134.04	0.50								
	20.00	100.00	1.25	0.95	1.188	0.92	108.96	25.00	16.82
125.78	0.50								
	21.00	100.00	1.25	0.95	1.253	0.89	106.09	25.00	16.49
122.57	0.50								
	22.00	100.00	1.25	0.95	1.318	0.87	103.43	25.00	16.18
119.61	0.50								
	23.00	100.00	1.25	0.95	1.383	0.85	100.96	25.00	15.90
116.86	0.50								
	24.00	100.00	1.25	0.95	1.449	0.83	98.66	25.00	15.63
114.30	0.50								
	25.00	100.00	1.25	0.95	1.514	0.81	96.51	25.00	15.39
111.90	0.50								
	26.00	100.00	1.25	0.95	1.579	0.80	94.50	25.00	15.16
109.66	0.50								
	27.00	100.00	1.25	0.95	1.644	0.78	92.61	25.00	14.94
107.55	0.50								
	28.00	100.00	1.25	1.00	1.709	0.76	95.60	25.00	15.28
110.89	0.50								
	29.00	100.00	1.25	1.00	1.775	0.75	93.83	25.00	15.08
108.91	0.50								
	30.00	100.00	1.25	1.00	1.840	0.74	92.15	25.00	14.89
107.04	0.50								
	31.00	88.40	1.25	1.00	1.905	0.72	80.06	25.00	13.50
93.55	0.50								
	32.00	76.80	1.25	1.00	1.970	0.71	68.39	25.00	12.15
80.55	0.50								
	33.00	65.20	1.25	1.00	2.036	0.70	57.13	25.00	10.86
67.98	0.50								

34.00	53.60	1.25	1.00	2.101	0.69	46.23	25.00	9.61	55.83	0.50
35.00	42.00	1.25	1.00	2.166	0.68	35.67	25.00	8.39	44.07	0.50
36.00	53.60	1.25	1.00	2.221	0.67	44.96	28.00	10.77	55.73	0.50
37.00	65.20	1.25	1.00	2.257	0.67	54.25	31.00	13.59	67.84	0.50
38.00	76.80	1.25	1.00	2.292	0.66	63.40	34.00	16.87	80.27	0.50
39.00	88.40	1.25	1.00	2.328	0.66	72.42	37.00	19.48	91.90	0.50
40.00	100.00	1.25	1.00	2.364	0.65	81.30	40.00	21.26	102.56	0.50
41.00	100.00	1.25	1.00	2.399	0.65	80.70	42.00	21.14	101.83	0.50
42.00	100.00	1.25	1.00	2.435	0.64	80.10	44.00	21.02	101.12	0.50
43.00	100.00	1.25	1.00	2.471	0.64	79.52	46.00	20.90	100.42	0.50
44.00	100.00	1.25	1.00	2.507	0.63	78.95	48.00	20.79	99.74	0.50
45.00	100.00	1.25	1.00	2.542	0.63	78.40	50.00	20.68	99.07	0.50
46.00	100.00	1.25	1.00	2.578	0.62	77.85	45.00	20.57	98.42	0.50
47.00	100.00	1.25	1.00	2.614	0.62	77.32	40.00	20.46	97.78	0.50
48.00	100.00	1.25	1.00	2.650	0.61	76.79	35.00	20.36	97.15	0.50
49.00	100.00	1.25	1.00	2.685	0.61	76.28	30.00	16.48	92.76	0.50
50.00	100.00	1.25	1.00	2.721	0.61	75.78	25.00	13.00	88.78	0.50

CRR is based on water table at 35.60 during In-Situ Testing

Factor of Safety, - Earthquake Magnitude= 7.30:

Depth ft	sigC' atm	CRR7.5	x Ksig	=CRRv	x MSF	=CRRm	CSRfs	F.S.=CRRm/CSRfs
1.00	0.04	0.50	1.00	0.50	1.07	0.54	0.36	5.00
2.00	0.08	0.50	1.00	0.50	1.07	0.54	0.36	5.00
3.00	0.12	0.50	1.00	0.50	1.07	0.54	0.35	5.00
4.00	0.16	0.50	1.00	0.50	1.07	0.54	0.35	5.00
5.00	0.19	0.50	1.00	0.50	1.07	0.54	0.35	5.00
6.00	0.23	0.50	1.00	0.50	1.07	0.54	0.35	5.00

7.00	0.27	0.50	1.00	0.50	1.07	0.54	0.35	5.00
8.00	0.31	0.50	1.00	0.50	1.07	0.54	0.35	5.00
9.00	0.35	0.50	1.00	0.50	1.07	0.54	0.35	5.00
10.00	0.38	0.50	1.00	0.50	1.07	0.54	0.35	5.00
11.00	0.42	0.50	1.00	0.50	1.07	0.54	0.35	5.00
12.00	0.46	0.50	1.00	0.50	1.07	0.54	0.35	5.00
13.00	0.50	0.50	1.00	0.50	1.07	0.54	0.35	5.00
14.00	0.53	0.50	1.00	0.50	1.07	0.54	0.35	5.00
15.00	0.57	0.50	1.00	0.50	1.07	0.54	0.34	5.00
16.00	0.61	0.50	1.00	0.50	1.07	0.54	0.34	5.00
17.00	0.65	0.50	1.00	0.50	1.07	0.54	0.34	5.00
18.00	0.69	0.50	1.00	0.50	1.07	0.54	0.34	5.00
19.00	0.73	0.50	1.00	0.50	1.07	0.54	0.34	5.00
20.00	0.77	0.50	1.00	0.50	1.07	0.54	0.34	5.00
21.00	0.81	0.50	1.00	0.50	1.07	0.54	0.34	5.00
22.00	0.86	0.50	1.00	0.50	1.07	0.54	0.34	5.00
23.00	0.90	0.50	1.00	0.50	1.07	0.54	0.34	5.00
24.00	0.94	0.50	1.00	0.50	1.07	0.54	0.34	5.00
25.00	0.98	0.50	1.00	0.50	1.07	0.54	0.34	5.00
26.00	1.03	0.50	1.00	0.50	1.07	0.54	0.34	5.00
27.00	1.07	0.50	1.00	0.50	1.07	0.53	0.33	5.00
28.00	1.11	0.50	0.99	0.49	1.07	0.53	0.33	5.00
29.00	1.15	0.50	0.98	0.49	1.07	0.53	0.33	5.00
30.00	1.20	0.50	0.98	0.49	1.07	0.52	0.33	5.00
31.00	1.24	0.50	0.97	0.48	1.07	0.52	0.33	1.55
32.00	1.28	0.50	0.96	0.48	1.07	0.52	0.34	1.53
33.00	1.32	0.50	0.96	0.48	1.07	0.51	0.34	1.52
34.00	1.37	0.50	0.95	0.48	1.07	0.51	0.34	1.50
35.00	1.41	0.50	0.95	0.47	1.07	0.51	0.34	1.49
36.00	1.44	0.50	0.94	0.47	1.07	0.50	0.34	1.47
37.00	1.47	0.50	0.94	0.47	1.07	0.50	0.34	1.47
38.00	1.49	0.50	0.93	0.47	1.07	0.50	0.34	1.46
39.00	1.51	0.50	0.93	0.47	1.07	0.50	0.34	1.45
40.00	1.54	0.50	0.93	0.46	1.07	0.50	0.34	1.45
41.00	1.56	0.50	0.92	0.46	1.07	0.50	0.34	1.44
42.00	1.58	0.50	0.92	0.46	1.07	0.49	0.34	1.44
43.00	1.61	0.50	0.92	0.46	1.07	0.49	0.34	1.43
44.00	1.63	0.50	0.92	0.46	1.07	0.49	0.34	1.43
45.00	1.65	0.50	0.91	0.46	1.07	0.49	0.34	1.43
46.00	1.68	0.50	0.91	0.46	1.07	0.49	0.34	1.43
47.00	1.70	0.50	0.91	0.45	1.07	0.49	0.34	1.43
48.00	1.72	0.50	0.90	0.45	1.07	0.48	0.34	1.43
49.00	1.75	0.50	0.90	0.45	1.07	0.48	0.34	1.43
50.00	1.77	0.50	0.90	0.45	1.07	0.48	0.34	1.43

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* F.S.<1: Liquefaction Potential Zone. (If above water table: F.S.=5)
^ No-liquefiable Soils or above Water Table.
(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

CPT convert to SPT for Settlement Analysis:
Fines Correction for Settlement Analysis:

Depth ft	Ic	qc/N60	qc1 atm	(N1)60	Fines %	d(N1)60	(N1)60s
1.00	-	-	-	81.50	50.00	0.00	81.50
2.00	-	-	-	100.00	50.00	0.00	100.00
3.00	-	-	-	100.00	50.00	0.00	100.00
4.00	-	-	-	100.00	37.50	0.00	100.00
5.00	-	-	-	84.26	25.00	0.00	84.26
6.00	-	-	-	100.00	37.00	0.00	100.00
7.00	-	-	-	100.00	49.00	0.00	100.00
8.00	-	-	-	100.00	55.00	0.00	100.00
9.00	-	-	-	100.00	55.00	0.00	100.00
10.00	-	-	-	76.43	55.00	0.00	76.43
11.00	-	-	-	91.27	54.00	0.00	91.27
12.00	-	-	-	100.00	53.00	0.00	100.00
13.00	-	-	-	100.00	52.00	0.00	100.00
14.00	-	-	-	100.00	51.00	0.00	100.00
15.00	-	-	-	100.00	50.00	0.00	100.00
16.00	-	-	-	100.00	45.00	0.00	100.00
17.00	-	-	-	100.00	40.00	0.00	100.00
18.00	-	-	-	100.00	35.00	0.00	100.00
19.00	-	-	-	100.00	30.00	0.00	100.00
20.00	-	-	-	100.00	25.00	0.00	100.00
21.00	-	-	-	100.00	25.00	0.00	100.00
22.00	-	-	-	100.00	25.00	0.00	100.00
23.00	-	-	-	100.00	25.00	0.00	100.00
24.00	-	-	-	100.00	25.00	0.00	100.00
25.00	-	-	-	100.00	25.00	0.00	100.00
26.00	-	-	-	100.00	25.00	0.00	100.00
27.00	-	-	-	100.00	25.00	0.00	100.00
28.00	-	-	-	100.00	25.00	0.00	100.00
29.00	-	-	-	100.00	25.00	0.00	100.00
30.00	-	-	-	100.00	25.00	0.00	100.00
31.00	-	-	-	93.55	25.00	0.00	93.55
32.00	-	-	-	80.55	25.00	0.00	80.55
33.00	-	-	-	67.98	25.00	0.00	67.98
34.00	-	-	-	55.83	25.00	0.00	55.83
35.00	-	-	-	44.07	25.00	0.00	44.07
36.00	-	-	-	55.73	28.00	0.00	55.73
37.00	-	-	-	67.84	31.00	0.00	67.84
38.00	-	-	-	80.27	34.00	0.00	80.27
39.00	-	-	-	91.90	37.00	0.00	91.90
40.00	-	-	-	100.00	40.00	0.00	100.00
41.00	-	-	-	100.00	42.00	0.00	100.00
42.00	-	-	-	100.00	44.00	0.00	100.00
43.00	-	-	-	100.00	46.00	0.00	100.00
44.00	-	-	-	99.74	48.00	0.00	99.74
45.00	-	-	-	99.07	50.00	0.00	99.07

46.00	-	-	-	98.42	45.00	0.00	98.42
47.00	-	-	-	97.78	40.00	0.00	97.78
48.00	-	-	-	97.15	35.00	0.00	97.15
49.00	-	-	-	92.76	30.00	0.00	92.76
50.00	-	-	-	88.78	25.00	0.00	88.78

(N1)60s has been fines corrected in liquefaction analysis, therefore d(N1)60=0.
Fines=NoLiq means the soils are not liquefiable.

Settlement of Saturated Sands:
Settlement Analysis Method: Ishihara / Yoshimine

Depth ft	CSRsf	/ MSF*	=CSRm	F.S.	Fines %	(N1)60s	Dr %	ec %	dsz in.	dsp in.	S in.
49.95	0.34	1.00	0.34	1.43	25.25	88.98	100.00	0.000	0.0E0	0.000	0.000
49.00	0.34	1.00	0.34	1.43	30.00	92.76	100.00	0.000	0.0E0	0.000	0.000
48.00	0.34	1.00	0.34	1.43	35.00	97.15	100.00	0.000	0.0E0	0.000	0.000
47.00	0.34	1.00	0.34	1.43	40.00	97.78	100.00	0.000	0.0E0	0.000	0.000
46.00	0.34	1.00	0.34	1.43	45.00	98.42	100.00	0.000	0.0E0	0.000	0.000
45.00	0.34	1.00	0.34	1.43	50.00	99.07	100.00	0.000	0.0E0	0.000	0.000
44.00	0.34	1.00	0.34	1.43	48.00	99.74	100.00	0.000	0.0E0	0.000	0.000
43.00	0.34	1.00	0.34	1.43	46.00	100.00	100.00	0.000	0.0E0	0.000	0.000
42.00	0.34	1.00	0.34	1.44	44.00	100.00	100.00	0.000	0.0E0	0.000	0.000
41.00	0.34	1.00	0.34	1.44	42.00	100.00	100.00	0.000	0.0E0	0.000	0.000
40.00	0.34	1.00	0.34	1.45	40.00	100.00	100.00	0.000	0.0E0	0.000	0.000
39.00	0.34	1.00	0.34	1.45	37.00	91.90	100.00	0.000	0.0E0	0.000	0.000
38.00	0.34	1.00	0.34	1.46	34.00	80.27	100.00	0.000	0.0E0	0.000	0.000
37.00	0.34	1.00	0.34	1.47	31.00	67.84	100.00	0.000	0.0E0	0.000	0.000
36.00	0.34	1.00	0.34	1.47	28.00	55.73	100.00	0.000	0.0E0	0.000	0.000

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        35.00   0.34    1.00    0.34    1.49    25.00   44.07   100.00  0.000
0.0E0   0.000   0.000
        34.00   0.34    1.00    0.34    1.50    25.00   55.83   100.00  0.000
0.0E0   0.000   0.000
        33.00   0.34    1.00    0.34    1.52    25.00   67.98   100.00  0.000
0.0E0   0.000   0.000
        32.00   0.34    1.00    0.34    1.53    25.00   80.55   100.00  0.000
0.0E0   0.000   0.000
        31.00   0.33    1.00    0.33    1.55    25.00   93.55   100.00  0.000
0.0E0   0.000   0.000
        30.05   0.33    1.00    0.33    1.57    25.00   100.00  100.00  0.000
0.0E0   0.000   0.000
        No Settlement of Saturated Sands

_____________________________________________________________________________
__________
        Settlement of Saturated Sands=0.000 in.
        qc1 and (N1)60 is after fines correction in liquefaction analysis
        dsz is per each segment, dz=0.05 ft
        dsp is per each print interval,  dp=1.00 ft
        S is cumulated settlement at this depth

        Settlement of Unsaturated Sands:
        Depth   sigma'  sigC'   (N1)60s CSRsf   Gmax    g*Ge/Gm  g_eff   ec7.5   Cec
ec      dsz     dsp     S
        ft      atm     atm                     atm                      %
%       in.     in.     in.

_____________________________________________________________________________
_____________________________
        30.00   1.84    1.20    100.00  0.33    2266.58 2.7E-4  0.0473  0.0150  1.01
0.0151  1.81E-4 0.000   0.000
        29.00   1.77    1.15    100.00  0.33    2226.05 2.7E-4  0.0460  0.0145  1.01
0.0147  1.76E-4 0.004   0.004
        28.00   1.71    1.11    100.00  0.33    2184.76 2.6E-4  0.0447  0.0141  1.01
0.0142  1.71E-4 0.003   0.007
        27.00   1.64    1.07    100.00  0.33    2142.69 2.6E-4  0.0433  0.0137  1.01
0.0138  1.66E-4 0.003   0.011
        26.00   1.58    1.03    100.00  0.34    2099.77 2.5E-4  0.0420  0.0133  1.01
0.0134  1.61E-4 0.003   0.014
        25.00   1.51    0.98    100.00  0.34    2055.95 2.5E-4  0.0407  0.0129  1.01
0.0130  1.56E-4 0.003   0.017
        24.00   1.45    0.94    100.00  0.34    2011.18 2.4E-4  0.0393  0.0124  1.01
0.0125  1.51E-4 0.003   0.020
        23.00   1.38    0.90    100.00  0.34    1965.39 2.4E-4  0.0380  0.0120  1.01
0.0121  1.45E-4 0.003   0.023
        22.00   1.32    0.86    100.00  0.34    1918.51 2.3E-4  0.0367  0.0116  1.01
0.0117  1.40E-4 0.003   0.026
        21.00   1.25    0.81    100.00  0.34    1870.46 2.3E-4  0.0353  0.0112  1.01
0.0113  1.35E-4 0.003   0.029
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20.00	1.19	0.77	100.00	0.34	1821.13	2.2E-4	0.0340	0.0108	1.01	0.0108
1.30E-4	0.003	0.031								
19.00	1.12	0.73	100.00	0.34	1770.98	2.2E-4	0.0384	0.0122	1.01	0.0123
1.47E-4	0.003	0.034								
18.00	1.06	0.69	100.00	0.34	1720.45	2.1E-4	0.0365	0.0116	1.01	0.0117
1.40E-4	0.003	0.037								
17.00	1.00	0.65	100.00	0.34	1669.48	2.1E-4	0.0347	0.0110	1.01	0.0111
1.33E-4	0.003	0.040								
16.00	0.94	0.61	100.00	0.34	1618.06	2.0E-4	0.0330	0.0104	1.01	0.0105
1.26E-4	0.003	0.042								
15.00	0.88	0.57	100.00	0.34	1566.13	1.9E-4	0.0314	0.0099	1.01	0.0100
1.20E-4	0.002	0.045								
14.00	0.82	0.53	100.00	0.35	1513.13	1.9E-4	0.0298	0.0094	1.01	0.0095
1.14E-4	0.002	0.047								
13.00	0.76	0.50	100.00	0.35	1458.48	1.8E-4	0.0282	0.0089	1.01	0.0090
1.08E-4	0.002	0.049								
12.00	0.70	0.46	100.00	0.35	1401.98	1.7E-4	0.0267	0.0085	1.01	0.0085
1.02E-4	0.002	0.051								
11.00	0.65	0.42	91.27	0.35	1303.17	1.7E-4	0.0264	0.0083	1.01	0.0084
1.01E-4	0.002	0.053								
10.00	0.59	0.38	76.43	0.35	1172.68	1.8E-4	0.0269	0.0085	1.01	0.0086
1.03E-4	0.002	0.055								
9.00	0.53	0.35	100.00	0.35	1218.29	1.5E-4	0.0271	0.0086	1.01	0.0087
1.04E-4	0.002	0.057								
8.00	0.47	0.31	100.00	0.35	1149.85	1.4E-4	0.0253	0.0080	1.01	0.0081
9.66E-5	0.002	0.059								
7.00	0.41	0.27	100.00	0.35	1076.44	1.4E-4	0.0233	0.0074	1.01	0.0074
8.91E-5	0.002	0.061								
6.00	0.36	0.23	100.00	0.35	997.55	1.3E-4	0.0212	0.0067	1.01	0.0068
8.13E-5	0.002	0.063								
5.00	0.30	0.19	84.26	0.35	861.30	1.2E-4	0.0204	0.0065	1.01	0.0065
7.82E-5	0.002	0.064								
4.00	0.24	0.16	100.00	0.35	817.88	1.0E-4	0.0167	0.0053	1.01	0.0053
6.40E-5	0.001	0.066								
3.00	0.18	0.12	100.00	0.35	712.98	9.1E-5	0.0170	0.0054	1.01	0.0054
6.52E-5	0.001	0.067								
2.00	0.12	0.08	100.00	0.36	587.27	7.5E-5	0.0127	0.0040	1.01	0.0040
4.85E-5	0.001	0.068								
1.00	0.06	0.04	81.50	0.36	389.85	5.7E-5	0.0086	0.0027	1.01	0.0027
3.30E-5	0.001	0.069								

Settlement of Unsaturated Sands=0.069 in.
dsz is per each segment, dz=0.05 ft
dsp is per each print interval, dp=1.00 ft
S is cumulated settlement at this depth

Total Settlement of Saturated and Unsaturated Sands=0.069 in.
Differential Settlement=0.035 to 0.046 in.

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1.0581 tsf(1 tsf = 1 ton/ft2 = 2 kip/ft2)
1 atm (atmosphere) = 101.325 kPa(1 kPa = 1 kN/m2 = 0.001 Mpa)

SPT	Field data from Standard Penetration Test (SPT)
BPT	Field data from Becker Penetration Test (BPT)
qc	Field data from Cone Penetration Test (CPT) [atm (tsf)]
fs	Friction from CPT testing [atm (tsf)]
Rf	Ratio of fs/qc (%)
gamma	Total unit weight of soil
gamma'	Effective unit weight of soil
Fines	Fines content [%]
D50	Mean grain size
Dr	Relative Density
sigma	Total vertical stress [atm]
sigma'	Effective vertical stress [atm]
sigC'	Effective confining pressure [atm]
rd	Acceleration reduction coefficient by Seed
a_max.	Peak Ground Acceleration (PGA) in ground surface
mZ	Linear acceleration reduction coefficient X depth
a_min.	Minimum acceleration under linear reduction, mZ
CRRv	CRR after overburden stress correction, CRRv=CRR7.5 * Ksig
CRR7.5	Cyclic resistance ratio (M=7.5)
Ksig	Overburden stress correction factor for CRR7.5
CRRm	After magnitude scaling correction CRRm=CRRv * MSF
MSF	Magnitude scaling factor from M=7.5 to user input M
CSR	Cyclic stress ratio induced by earthquake
CSRfs	CSRfs=CSR*fs1 (Default fs1=1)
fs1	First CSR curve in graphic defined in #9 of Advanced page
fs2	2nd CSR curve in graphic defined in #9 of Advanced page
F.S.	Calculated factor of safety against liquefaction F.S.=CRRm/CSRsf
Cebs	Energy Ratio, Borehole Dia., and Sampling Method Corrections
Cr	Rod Length Corrections
Cn	Overburden Pressure Correction
(N1)60	SPT after corrections, (N1)60=SPT * Cr * Cn * Cebs
d(N1)60	Fines correction of SPT
(N1)60f	(N1)60 after fines corrections, (N1)60f=(N1)60 + d(N1)60
Cq	Overburden stress correction factor
qc1	CPT after Overburden stress correction
dqc1	Fines correction of CPT
qc1f	CPT after Fines and Overburden correction, qc1f=qc1 + dqc1
qc1n	CPT after normalization in Robertson's method
Kc	Fine correction factor in Robertson's Method
qc1f	CPT after Fines correction in Robertson's Method
Ic	Soil type index in Suzuki's and Robertson's Methods

(N1)60s	(N1)60 after settlement fines corrections
CSRm	After magnitude scaling correction for Settlement calculation CSRm=CSRsf / MSF*
CSRfs	Cyclic stress ratio induced by earthquake with user inputed fs
MSF*	Scaling factor from CSR, MSF*=1, based on Item 2 of Page C.
ec	Volumetric strain for saturated sands
dz	Calculation segment, dz=0.050 ft
dsz	Settlement in each segment, dz
dp	User defined print interval
dsp	Settlement in each print interval, dp
Gmax	Shear Modulus at low strain
g_eff	gamma_eff, Effective shear Strain
g*Ge/Gm	gamma_eff * G_eff/G_max, Strain-modulus ratio
ec7.5	Volumetric Strain for magnitude=7.5
Cec	Magnitude correction factor for any magnitude
ec	Volumetric strain for unsaturated sands, ec=Cec * ec7.5
NoLiq	No-Liquefy Soils

References:

1. NCEER Workshop on Evaluation of Liquefaction Resistance of Soils. Youd, T.L., and Idriss, I.M., eds., Technical Report NCEER 97-0022.
SP117. Southern California Earthquake Center. Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California. University of Southern California. March 1999.
2. RECENT ADVANCES IN SOIL LIQUEFACTION ENGINEERING AND SEISMIC SITE RESPONSE EVALUATION, Paper No. SPL-2, PROCEEDINGS: Fourth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, March 2001.
3. RECENT ADVANCES IN SOIL LIQUEFACTION ENGINEERING: A UNIFIED AND CONSISTENT FRAMEWORK, Earthquake Engineering Research Center, Report No. EERC 2003-06 by R.B Seed and etc. April 2003.

Note: Print Interval you selected does not show complete results. To get complete results, you should select 'Segment' in Print Interval (Item 12, Page C).

****
LIQUEFACTION ANALYSIS CALCULATION DETAILS

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Input File Name: UNTITLED
Title: Cypress Sands Apartment Project
Subtitle: Seismic Settlement Analysis

Input Data:
Surface Elev.=1495
Hole No.=B-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 35.60 ft
Water Table during In-Situ Testing= 35.60 ft
Max. Acceleration=0.55 g
Earthquake Magnitude=7.30
No-Liquefiable Soils: CL, OL are Non-Liq. Soil
1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=User)
10. Average two input data between two Depths: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	Gamma pcf	Fines %
1.00	40.00	132.00	50.00
3.00	100.00	121.00	50.00
5.00	45.00	124.00	25.00
7.50	100.00	124.00	55.00
10.00	43.00	121.00	55.00
15.00	100.00	124.00	50.00
20.00	100.00	138.00	25.00

25.00	100.00	138.00	25.00
30.00	100.00	138.00	25.00
35.00	42.00	138.00	25.00
40.00	100.00	138.00	40.00
45.00	100.00	138.00	50.00
50.00	100.00	138.00	25.00

Output Results:

Calculation segment, dz=0.050 ft

User defined Print Interval, dp=1.00 ft

Peak Ground Acceleration (PGA), a_max = 0.55g

CSR Calculation:

Depth	gamma	sigma	gamma'	sigma'	rd	mZ	a(z)	CSR	x fs1	=CSRfs
ft	pcf	atm	pcf	atm		g	g			
1.00	132.00	0.062	132.00	0.062	1.00	0.000	0.550	0.36	1.00	0.36
2.00	126.50	0.124	126.50	0.124	1.00	0.000	0.550	0.36	1.00	0.36
3.00	121.00	0.182	121.00	0.182	0.99	0.000	0.550	0.35	1.00	0.35
4.00	122.50	0.240	122.50	0.240	0.99	0.000	0.550	0.35	1.00	0.35
5.00	124.00	0.298	124.00	0.298	0.99	0.000	0.550	0.35	1.00	0.35
6.00	124.00	0.356	124.00	0.356	0.99	0.000	0.550	0.35	1.00	0.35
7.00	124.00	0.415	124.00	0.415	0.98	0.000	0.550	0.35	1.00	0.35
8.00	123.40	0.474	123.40	0.474	0.98	0.000	0.550	0.35	1.00	0.35
9.00	122.20	0.532	122.20	0.532	0.98	0.000	0.550	0.35	1.00	0.35
10.00	121.00	0.589	121.00	0.589	0.98	0.000	0.550	0.35	1.00	0.35
11.00	121.60	0.646	121.60	0.646	0.97	0.000	0.550	0.35	1.00	0.35
12.00	122.20	0.704	122.20	0.704	0.97	0.000	0.550	0.35	1.00	0.35
13.00	122.80	0.762	122.80	0.762	0.97	0.000	0.550	0.35	1.00	0.35
14.00	123.40	0.820	123.40	0.820	0.97	0.000	0.550	0.35	1.00	0.35

15.00	124.00	0.878	124.00	0.878	0.97	0.000	0.550	0.34	1.00
0.34									
16.00	126.80	0.938	126.80	0.938	0.96	0.000	0.550	0.34	1.00
0.34									
17.00	129.60	0.998	129.60	0.998	0.96	0.000	0.550	0.34	1.00
0.34									
18.00	132.40	1.060	132.40	1.060	0.96	0.000	0.550	0.34	1.00
0.34									
19.00	135.20	1.123	135.20	1.123	0.96	0.000	0.550	0.34	1.00
0.34									
20.00	138.00	1.188	138.00	1.188	0.95	0.000	0.550	0.34	1.00
0.34									
21.00	138.00	1.253	138.00	1.253	0.95	0.000	0.550	0.34	1.00
0.34									
22.00	138.00	1.318	138.00	1.318	0.95	0.000	0.550	0.34	1.00
0.34									
23.00	138.00	1.383	138.00	1.383	0.95	0.000	0.550	0.34	1.00
0.34									
24.00	138.00	1.449	138.00	1.449	0.94	0.000	0.550	0.34	1.00
0.34									
25.00	138.00	1.514	138.00	1.514	0.94	0.000	0.550	0.34	1.00
0.34									
26.00	138.00	1.579	138.00	1.579	0.94	0.000	0.550	0.34	1.00
0.34									
27.00	138.00	1.644	138.00	1.644	0.94	0.000	0.550	0.33	1.00
0.33									
28.00	138.00	1.709	138.00	1.709	0.93	0.000	0.550	0.33	1.00
0.33									
29.00	138.00	1.775	138.00	1.775	0.93	0.000	0.550	0.33	1.00
0.33									
30.00	138.00	1.840	138.00	1.840	0.93	0.000	0.550	0.33	1.00
0.33									
31.00	138.00	1.905	138.00	1.905	0.92	0.000	0.550	0.33	1.00
0.33									
32.00	138.00	1.970	138.00	1.970	0.91	0.000	0.550	0.33	1.00
0.33									
33.00	138.00	2.036	138.00	2.036	0.91	0.000	0.550	0.32	1.00
0.32									
34.00	138.00	2.101	138.00	2.101	0.90	0.000	0.550	0.32	1.00
0.32									
35.00	138.00	2.166	138.00	2.166	0.89	0.000	0.550	0.32	1.00
0.32									
36.00	138.00	2.231	75.60	2.221	0.88	0.000	0.550	0.32	1.00
0.32									
37.00	138.00	2.296	75.60	2.257	0.87	0.000	0.550	0.32	1.00
0.32									
38.00	138.00	2.362	75.60	2.292	0.86	0.000	0.550	0.32	1.00
0.32									
39.00	138.00	2.427	75.60	2.328	0.86	0.000	0.550	0.32	1.00
0.32									

40.00	138.00	2.492	75.60	2.364	0.85	0.000	0.550	0.32	1.00	0.32
41.00	138.00	2.557	75.60	2.399	0.84	0.000	0.550	0.32	1.00	0.32
42.00	138.00	2.622	75.60	2.435	0.83	0.000	0.550	0.32	1.00	0.32
43.00	138.00	2.688	75.60	2.471	0.82	0.000	0.550	0.32	1.00	0.32
44.00	138.00	2.753	75.60	2.507	0.82	0.000	0.550	0.32	1.00	0.32
45.00	138.00	2.818	75.60	2.542	0.81	0.000	0.550	0.32	1.00	0.32
46.00	138.00	2.883	75.60	2.578	0.80	0.000	0.550	0.32	1.00	0.32
47.00	138.00	2.949	75.60	2.614	0.79	0.000	0.550	0.32	1.00	0.32
48.00	138.00	3.014	75.60	2.650	0.78	0.000	0.550	0.32	1.00	0.32
49.00	138.00	3.079	75.60	2.685	0.78	0.000	0.550	0.32	1.00	0.32
50.00	138.00	3.144	75.60	2.721	0.77	0.000	0.550	0.32	1.00	0.32

CSR is based on water table at 35.60 during earthquake

CRR Calculation from SPT or BPT data:

Depth	SPT	Cebs	Cr	sigma'	Cn	(N1)60	Fines	d(N1)60	(N1)60f	CRR7.5
ft				atm			%			
1.00	40.00	1.25	0.75	0.062	1.70	63.75	50.00	17.75	81.50	0.50
2.00	70.00	1.25	0.75	0.124	1.70	111.56	50.00	27.31	138.87	0.50
3.00	100.00	1.25	0.75	0.182	1.70	159.37	50.00	36.87	196.25	0.50
4.00	72.50	1.25	0.75	0.240	1.70	115.55	37.50	28.11	143.66	0.50
5.00	45.00	1.25	0.75	0.298	1.70	71.72	25.00	12.54	84.26	0.50
6.00	67.00	1.25	0.75	0.356	1.68	105.22	37.00	26.04	131.26	0.50
7.00	89.00	1.25	0.75	0.415	1.55	129.52	49.00	30.90	160.43	0.50
8.00	88.60	1.25	0.75	0.474	1.45	120.71	55.00	29.14	149.85	0.50

	9.00	65.80	1.25	0.85	0.532	1.37	95.89	55.00	24.18
120.07	0.50								
	10.00	43.00	1.25	0.85	0.589	1.30	59.53	55.00	16.91
76.43	0.50								
	11.00	54.40	1.25	0.85	0.646	1.24	71.89	54.00	19.38
91.27	0.50								
	12.00	65.80	1.25	0.85	0.704	1.19	83.33	53.00	21.67
104.99	0.50								
	13.00	77.20	1.25	0.85	0.762	1.15	93.98	52.00	23.80
117.77	0.50								
	14.00	88.60	1.25	0.85	0.820	1.10	103.96	51.00	25.79
129.75	0.50								
	15.00	100.00	1.25	0.95	0.878	1.07	126.70	50.00	30.34
157.04	0.50								
	16.00	100.00	1.25	0.95	0.938	1.03	122.63	45.00	29.53
152.16	0.50								
	17.00	100.00	1.25	0.95	0.998	1.00	118.86	40.00	28.77
147.63	0.50								
	18.00	100.00	1.25	0.95	1.060	0.97	115.34	35.00	27.71
143.04	0.50								
	19.00	100.00	1.25	0.95	1.123	0.94	112.04	30.00	22.00
134.04	0.50								
	20.00	100.00	1.25	0.95	1.188	0.92	108.96	25.00	16.82
125.78	0.50								
	21.00	100.00	1.25	0.95	1.253	0.89	106.09	25.00	16.49
122.57	0.50								
	22.00	100.00	1.25	0.95	1.318	0.87	103.43	25.00	16.18
119.61	0.50								
	23.00	100.00	1.25	0.95	1.383	0.85	100.96	25.00	15.90
116.86	0.50								
	24.00	100.00	1.25	0.95	1.449	0.83	98.66	25.00	15.63
114.30	0.50								
	25.00	100.00	1.25	0.95	1.514	0.81	96.51	25.00	15.39
111.90	0.50								
	26.00	100.00	1.25	0.95	1.579	0.80	94.50	25.00	15.16
109.66	0.50								
	27.00	100.00	1.25	0.95	1.644	0.78	92.61	25.00	14.94
107.55	0.50								
	28.00	100.00	1.25	1.00	1.709	0.76	95.60	25.00	15.28
110.89	0.50								
	29.00	100.00	1.25	1.00	1.775	0.75	93.83	25.00	15.08
108.91	0.50								
	30.00	100.00	1.25	1.00	1.840	0.74	92.15	25.00	14.89
107.04	0.50								
	31.00	88.40	1.25	1.00	1.905	0.72	80.06	25.00	13.50
93.55	0.50								
	32.00	76.80	1.25	1.00	1.970	0.71	68.39	25.00	12.15
80.55	0.50								
	33.00	65.20	1.25	1.00	2.036	0.70	57.13	25.00	10.86
67.98	0.50								

34.00	53.60	1.25	1.00	2.101	0.69	46.23	25.00	9.61	55.83	0.50
35.00	42.00	1.25	1.00	2.166	0.68	35.67	25.00	8.39	44.07	0.50
36.00	53.60	1.25	1.00	2.221	0.67	44.96	28.00	10.77	55.73	0.50
37.00	65.20	1.25	1.00	2.257	0.67	54.25	31.00	13.59	67.84	0.50
38.00	76.80	1.25	1.00	2.292	0.66	63.40	34.00	16.87	80.27	0.50
39.00	88.40	1.25	1.00	2.328	0.66	72.42	37.00	19.48	91.90	0.50
40.00	100.00	1.25	1.00	2.364	0.65	81.30	40.00	21.26	102.56	0.50
41.00	100.00	1.25	1.00	2.399	0.65	80.70	42.00	21.14	101.83	0.50
42.00	100.00	1.25	1.00	2.435	0.64	80.10	44.00	21.02	101.12	0.50
43.00	100.00	1.25	1.00	2.471	0.64	79.52	46.00	20.90	100.42	0.50
44.00	100.00	1.25	1.00	2.507	0.63	78.95	48.00	20.79	99.74	0.50
45.00	100.00	1.25	1.00	2.542	0.63	78.40	50.00	20.68	99.07	0.50
46.00	100.00	1.25	1.00	2.578	0.62	77.85	45.00	20.57	98.42	0.50
47.00	100.00	1.25	1.00	2.614	0.62	77.32	40.00	20.46	97.78	0.50
48.00	100.00	1.25	1.00	2.650	0.61	76.79	35.00	20.36	97.15	0.50
49.00	100.00	1.25	1.00	2.685	0.61	76.28	30.00	16.48	92.76	0.50
50.00	100.00	1.25	1.00	2.721	0.61	75.78	25.00	13.00	88.78	0.50

CRR is based on water table at 35.60 during In-Situ Testing

Factor of Safety, - Earthquake Magnitude= 7.30:

Depth ft	sigC' atm	CRR7.5	x Ksig	=CRRv	x MSF	=CRRm	CSRfs	F.S.=CRRm/CSRfs
1.00	0.04	0.50	1.00	0.50	1.07	0.54	0.36	5.00
2.00	0.08	0.50	1.00	0.50	1.07	0.54	0.36	5.00
3.00	0.12	0.50	1.00	0.50	1.07	0.54	0.35	5.00
4.00	0.16	0.50	1.00	0.50	1.07	0.54	0.35	5.00
5.00	0.19	0.50	1.00	0.50	1.07	0.54	0.35	5.00
6.00	0.23	0.50	1.00	0.50	1.07	0.54	0.35	5.00

7.00	0.27	0.50	1.00	0.50	1.07	0.54	0.35	5.00
8.00	0.31	0.50	1.00	0.50	1.07	0.54	0.35	5.00
9.00	0.35	0.50	1.00	0.50	1.07	0.54	0.35	5.00
10.00	0.38	0.50	1.00	0.50	1.07	0.54	0.35	5.00
11.00	0.42	0.50	1.00	0.50	1.07	0.54	0.35	5.00
12.00	0.46	0.50	1.00	0.50	1.07	0.54	0.35	5.00
13.00	0.50	0.50	1.00	0.50	1.07	0.54	0.35	5.00
14.00	0.53	0.50	1.00	0.50	1.07	0.54	0.35	5.00
15.00	0.57	0.50	1.00	0.50	1.07	0.54	0.34	5.00
16.00	0.61	0.50	1.00	0.50	1.07	0.54	0.34	5.00
17.00	0.65	0.50	1.00	0.50	1.07	0.54	0.34	5.00
18.00	0.69	0.50	1.00	0.50	1.07	0.54	0.34	5.00
19.00	0.73	0.50	1.00	0.50	1.07	0.54	0.34	5.00
20.00	0.77	0.50	1.00	0.50	1.07	0.54	0.34	5.00
21.00	0.81	0.50	1.00	0.50	1.07	0.54	0.34	5.00
22.00	0.86	0.50	1.00	0.50	1.07	0.54	0.34	5.00
23.00	0.90	0.50	1.00	0.50	1.07	0.54	0.34	5.00
24.00	0.94	0.50	1.00	0.50	1.07	0.54	0.34	5.00
25.00	0.98	0.50	1.00	0.50	1.07	0.54	0.34	5.00
26.00	1.03	0.50	1.00	0.50	1.07	0.54	0.34	5.00
27.00	1.07	0.50	1.00	0.50	1.07	0.53	0.33	5.00
28.00	1.11	0.50	0.99	0.49	1.07	0.53	0.33	5.00
29.00	1.15	0.50	0.98	0.49	1.07	0.53	0.33	5.00
30.00	1.20	0.50	0.98	0.49	1.07	0.52	0.33	5.00
31.00	1.24	0.50	0.97	0.48	1.07	0.52	0.33	5.00
32.00	1.28	0.50	0.96	0.48	1.07	0.52	0.33	5.00
33.00	1.32	0.50	0.96	0.48	1.07	0.51	0.32	5.00
34.00	1.37	0.50	0.95	0.48	1.07	0.51	0.32	5.00
35.00	1.41	0.50	0.95	0.47	1.07	0.51	0.32	5.00
36.00	1.44	0.50	0.94	0.47	1.07	0.50	0.32	1.59
37.00	1.47	0.50	0.94	0.47	1.07	0.50	0.32	1.58
38.00	1.49	0.50	0.93	0.47	1.07	0.50	0.32	1.57
39.00	1.51	0.50	0.93	0.47	1.07	0.50	0.32	1.56
40.00	1.54	0.50	0.93	0.46	1.07	0.50	0.32	1.55
41.00	1.56	0.50	0.92	0.46	1.07	0.50	0.32	1.55
42.00	1.58	0.50	0.92	0.46	1.07	0.49	0.32	1.54
43.00	1.61	0.50	0.92	0.46	1.07	0.49	0.32	1.54
44.00	1.63	0.50	0.92	0.46	1.07	0.49	0.32	1.53
45.00	1.65	0.50	0.91	0.46	1.07	0.49	0.32	1.53
46.00	1.68	0.50	0.91	0.46	1.07	0.49	0.32	1.52
47.00	1.70	0.50	0.91	0.45	1.07	0.49	0.32	1.52
48.00	1.72	0.50	0.90	0.45	1.07	0.48	0.32	1.52
49.00	1.75	0.50	0.90	0.45	1.07	0.48	0.32	1.52
50.00	1.77	0.50	0.90	0.45	1.07	0.48	0.32	1.52

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* F.S.<1: Liquefaction Potential Zone. (If above water table: F.S.=5)
^ No-liquefiable Soils or above Water Table.
(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

CPT convert to SPT for Settlement Analysis:
Fines Correction for Settlement Analysis:

Depth ft	Ic	qc/N60	qc1 atm	(N1)60	Fines %	d(N1)60	(N1)60s
1.00	-	-	-	81.50	50.00	0.00	81.50
2.00	-	-	-	100.00	50.00	0.00	100.00
3.00	-	-	-	100.00	50.00	0.00	100.00
4.00	-	-	-	100.00	37.50	0.00	100.00
5.00	-	-	-	84.26	25.00	0.00	84.26
6.00	-	-	-	100.00	37.00	0.00	100.00
7.00	-	-	-	100.00	49.00	0.00	100.00
8.00	-	-	-	100.00	55.00	0.00	100.00
9.00	-	-	-	100.00	55.00	0.00	100.00
10.00	-	-	-	76.43	55.00	0.00	76.43
11.00	-	-	-	91.27	54.00	0.00	91.27
12.00	-	-	-	100.00	53.00	0.00	100.00
13.00	-	-	-	100.00	52.00	0.00	100.00
14.00	-	-	-	100.00	51.00	0.00	100.00
15.00	-	-	-	100.00	50.00	0.00	100.00
16.00	-	-	-	100.00	45.00	0.00	100.00
17.00	-	-	-	100.00	40.00	0.00	100.00
18.00	-	-	-	100.00	35.00	0.00	100.00
19.00	-	-	-	100.00	30.00	0.00	100.00
20.00	-	-	-	100.00	25.00	0.00	100.00
21.00	-	-	-	100.00	25.00	0.00	100.00
22.00	-	-	-	100.00	25.00	0.00	100.00
23.00	-	-	-	100.00	25.00	0.00	100.00
24.00	-	-	-	100.00	25.00	0.00	100.00
25.00	-	-	-	100.00	25.00	0.00	100.00
26.00	-	-	-	100.00	25.00	0.00	100.00
27.00	-	-	-	100.00	25.00	0.00	100.00
28.00	-	-	-	100.00	25.00	0.00	100.00
29.00	-	-	-	100.00	25.00	0.00	100.00
30.00	-	-	-	100.00	25.00	0.00	100.00
31.00	-	-	-	93.55	25.00	0.00	93.55
32.00	-	-	-	80.55	25.00	0.00	80.55
33.00	-	-	-	67.98	25.00	0.00	67.98
34.00	-	-	-	55.83	25.00	0.00	55.83
35.00	-	-	-	44.07	25.00	0.00	44.07
36.00	-	-	-	55.73	28.00	0.00	55.73
37.00	-	-	-	67.84	31.00	0.00	67.84
38.00	-	-	-	80.27	34.00	0.00	80.27
39.00	-	-	-	91.90	37.00	0.00	91.90
40.00	-	-	-	100.00	40.00	0.00	100.00
41.00	-	-	-	100.00	42.00	0.00	100.00
42.00	-	-	-	100.00	44.00	0.00	100.00
43.00	-	-	-	100.00	46.00	0.00	100.00
44.00	-	-	-	99.74	48.00	0.00	99.74
45.00	-	-	-	99.07	50.00	0.00	99.07

46.00	-	-	-	98.42	45.00	0.00	98.42
47.00	-	-	-	97.78	40.00	0.00	97.78
48.00	-	-	-	97.15	35.00	0.00	97.15
49.00	-	-	-	92.76	30.00	0.00	92.76
50.00	-	-	-	88.78	25.00	0.00	88.78

(N1)60s has been fines corrected in liquefaction analysis, therefore d(N1)60=0.
Fines=NoLiq means the soils are not liquefiable.

Settlement of Saturated Sands:
Settlement Analysis Method: Ishihara / Yoshimine

Depth ft	CSRsf	/ MSF*	=CSRm	F.S.	Fines %	(N1)60s	Dr %	ec %	dsz in.	dsp in.	S in.
49.95	0.32	1.00	0.32	1.52	25.25	88.98	100.00	0.000	0.0E0	0.000	0.000
49.00	0.32	1.00	0.32	1.52	30.00	92.76	100.00	0.000	0.0E0	0.000	0.000
48.00	0.32	1.00	0.32	1.52	35.00	97.15	100.00	0.000	0.0E0	0.000	0.000
47.00	0.32	1.00	0.32	1.52	40.00	97.78	100.00	0.000	0.0E0	0.000	0.000
46.00	0.32	1.00	0.32	1.52	45.00	98.42	100.00	0.000	0.0E0	0.000	0.000
45.00	0.32	1.00	0.32	1.53	50.00	99.07	100.00	0.000	0.0E0	0.000	0.000
44.00	0.32	1.00	0.32	1.53	48.00	99.74	100.00	0.000	0.0E0	0.000	0.000
43.00	0.32	1.00	0.32	1.54	46.00	100.00	100.00	0.000	0.0E0	0.000	0.000
42.00	0.32	1.00	0.32	1.54	44.00	100.00	100.00	0.000	0.0E0	0.000	0.000
41.00	0.32	1.00	0.32	1.55	42.00	100.00	100.00	0.000	0.0E0	0.000	0.000
40.00	0.32	1.00	0.32	1.55	40.00	100.00	100.00	0.000	0.0E0	0.000	0.000
39.00	0.32	1.00	0.32	1.56	37.00	91.90	100.00	0.000	0.0E0	0.000	0.000
38.00	0.32	1.00	0.32	1.57	34.00	80.27	100.00	0.000	0.0E0	0.000	0.000
37.00	0.32	1.00	0.32	1.58	31.00	67.84	100.00	0.000	0.0E0	0.000	0.000
36.00	0.32	1.00	0.32	1.59	28.00	55.73	100.00	0.000	0.0E0	0.000	0.000

```
        35.65   0.32    1.00    0.32    1.60    26.95   51.56   100.00  0.000
0.0E0   0.000   0.000
        No Settlement of Saturated Sands

_____________________________________________________________________________
__________
        Settlement of Saturated Sands=0.000 in.
        qc1 and (N1)60 is after fines correction in liquefaction analysis
        dsz is per each segment, dz=0.05 ft
        dsp is per each print interval,  dp=1.00 ft
        S is cumulated settlement at this depth

        Settlement of Unsaturated Sands:
        Depth   sigma'  sigC'   (N1)60s CSRsf   Gmax    g*Ge/Gm  g_eff   ec7.5   Cec
ec      dsz     dsp     S
        ft      atm     atm                     atm                      %
%       in.     in.     in.

_____________________________________________________________________________
_____________________________
        35.60   2.21    1.43    50.98   0.32    1982.63 3.5E-4  0.0819  0.0259  1.01
0.0261  3.13E-4 0.000   0.000
        35.00   2.17    1.41    44.07   0.32    1871.91 3.7E-4  0.0911  0.0288  1.01
0.0291  3.49E-4 0.004   0.004
        34.00   2.10    1.37    55.83   0.32    1994.69 3.4E-4  0.0748  0.0236  1.01
0.0238  2.86E-4 0.006   0.011
        33.00   2.04    1.32    67.98   0.32    2096.55 3.1E-4  0.0639  0.0202  1.01
0.0204  2.45E-4 0.005   0.016
        32.00   1.97    1.28    80.55   0.33    2182.51 2.9E-4  0.0561  0.0177  1.01
0.0179  2.15E-4 0.005   0.020
        31.00   1.91    1.24    93.55   0.33    2255.79 2.8E-4  0.0501  0.0158  1.01
0.0160  1.92E-4 0.004   0.024
        30.00   1.84    1.20    100.00  0.33    2266.58 2.7E-4  0.0473  0.0150  1.01
0.0151  1.81E-4 0.004   0.028
        29.00   1.77    1.15    100.00  0.33    2226.05 2.7E-4  0.0460  0.0145  1.01
0.0147  1.76E-4 0.004   0.032
        28.00   1.71    1.11    100.00  0.33    2184.76 2.6E-4  0.0447  0.0141  1.01
0.0142  1.71E-4 0.003   0.035
        27.00   1.64    1.07    100.00  0.33    2142.69 2.6E-4  0.0433  0.0137  1.01
0.0138  1.66E-4 0.003   0.039
        26.00   1.58    1.03    100.00  0.34    2099.77 2.5E-4  0.0420  0.0133  1.01
0.0134  1.61E-4 0.003   0.042
        25.00   1.51    0.98    100.00  0.34    2055.95 2.5E-4  0.0407  0.0129  1.01
0.0130  1.56E-4 0.003   0.045
        24.00   1.45    0.94    100.00  0.34    2011.18 2.4E-4  0.0393  0.0124  1.01
0.0125  1.51E-4 0.003   0.048
        23.00   1.38    0.90    100.00  0.34    1965.39 2.4E-4  0.0380  0.0120  1.01
0.0121  1.45E-4 0.003   0.051
        22.00   1.32    0.86    100.00  0.34    1918.51 2.3E-4  0.0367  0.0116  1.01
0.0117  1.40E-4 0.003   0.054
```

21.00	1.25	0.81	100.00	0.34	1870.46	2.3E-4	0.0353	0.0112	1.01	0.0113
1.35E-4	0.003	0.057								
20.00	1.19	0.77	100.00	0.34	1821.13	2.2E-4	0.0340	0.0108	1.01	0.0108
1.30E-4	0.003	0.059								
19.00	1.12	0.73	100.00	0.34	1770.98	2.2E-4	0.0384	0.0122	1.01	0.0123
1.47E-4	0.003	0.062								
18.00	1.06	0.69	100.00	0.34	1720.45	2.1E-4	0.0365	0.0116	1.01	0.0117
1.40E-4	0.003	0.065								
17.00	1.00	0.65	100.00	0.34	1669.48	2.1E-4	0.0347	0.0110	1.01	0.0111
1.33E-4	0.003	0.068								
16.00	0.94	0.61	100.00	0.34	1618.06	2.0E-4	0.0330	0.0104	1.01	0.0105
1.26E-4	0.003	0.070								
15.00	0.88	0.57	100.00	0.34	1566.13	1.9E-4	0.0314	0.0099	1.01	0.0100
1.20E-4	0.002	0.073								
14.00	0.82	0.53	100.00	0.35	1513.13	1.9E-4	0.0298	0.0094	1.01	0.0095
1.14E-4	0.002	0.075								
13.00	0.76	0.50	100.00	0.35	1458.48	1.8E-4	0.0282	0.0089	1.01	0.0090
1.08E-4	0.002	0.077								
12.00	0.70	0.46	100.00	0.35	1401.98	1.7E-4	0.0267	0.0085	1.01	0.0085
1.02E-4	0.002	0.079								
11.00	0.65	0.42	91.27	0.35	1303.17	1.7E-4	0.0264	0.0083	1.01	0.0084
1.01E-4	0.002	0.081								
10.00	0.59	0.38	76.43	0.35	1172.68	1.8E-4	0.0269	0.0085	1.01	0.0086
1.03E-4	0.002	0.083								
9.00	0.53	0.35	100.00	0.35	1218.29	1.5E-4	0.0271	0.0086	1.01	0.0087
1.04E-4	0.002	0.085								
8.00	0.47	0.31	100.00	0.35	1149.85	1.4E-4	0.0253	0.0080	1.01	0.0081
9.66E-5	0.002	0.087								
7.00	0.41	0.27	100.00	0.35	1076.44	1.4E-4	0.0233	0.0074	1.01	0.0074
8.91E-5	0.002	0.089								
6.00	0.36	0.23	100.00	0.35	997.55	1.3E-4	0.0212	0.0067	1.01	0.0068
8.13E-5	0.002	0.091								
5.00	0.30	0.19	84.26	0.35	861.30	1.2E-4	0.0204	0.0065	1.01	0.0065
7.82E-5	0.002	0.092								
4.00	0.24	0.16	100.00	0.35	817.88	1.0E-4	0.0167	0.0053	1.01	0.0053
6.40E-5	0.001	0.094								
3.00	0.18	0.12	100.00	0.35	712.98	9.1E-5	0.0170	0.0054	1.01	0.0054
6.52E-5	0.001	0.095								
2.00	0.12	0.08	100.00	0.36	587.27	7.5E-5	0.0127	0.0040	1.01	0.0040
4.85E-5	0.001	0.096								
1.00	0.06	0.04	81.50	0.36	389.85	5.7E-5	0.0086	0.0027	1.01	0.0027
3.30E-5	0.001	0.097								

Settlement of Unsaturated Sands=0.097 in.
dsz is per each segment, dz=0.05 ft
dsp is per each print interval, dp=1.00 ft
S is cumulated settlement at this depth

Total Settlement of Saturated and Unsaturated Sands=0.097 in.
Differential Settlement=0.049 to 0.064 in.

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1.0581 tsf(1 tsf = 1 ton/ft2 = 2 kip/ft2)
1 atm (atmosphere) = 101.325 kPa(1 kPa = 1 kN/m2 = 0.001 Mpa)

SPT	Field data from Standard Penetration Test (SPT)
BPT	Field data from Becker Penetration Test (BPT)
qc	Field data from Cone Penetration Test (CPT) [atm (tsf)]
fs	Friction from CPT testing [atm (tsf)]
Rf	Ratio of fs/qc (%)
gamma	Total unit weight of soil
gamma'	Effective unit weight of soil
Fines	Fines content [%]
D50	Mean grain size
Dr	Relative Density
sigma	Total vertical stress [atm]
sigma'	Effective vertical stress [atm]
sigC'	Effective confining pressure [atm]
rd	Acceleration reduction coefficient by Seed
a_max.	Peak Ground Acceleration (PGA) in ground surface
mZ	Linear acceleration reduction coefficient X depth
a_min.	Minimum acceleration under linear reduction, mZ
CRRv	CRR after overburden stress correction, CRRv=CRR7.5 * Ksig
CRR7.5	Cyclic resistance ratio (M=7.5)
Ksig	Overburden stress correction factor for CRR7.5
CRRm	After magnitude scaling correction CRRm=CRRv * MSF
MSF	Magnitude scaling factor from M=7.5 to user input M
CSR	Cyclic stress ratio induced by earthquake
CSRfs	CSRfs=CSR*fs1 (Default fs1=1)
fs1	First CSR curve in graphic defined in #9 of Advanced page
fs2	2nd CSR curve in graphic defined in #9 of Advanced page
F.S.	Calculated factor of safety against liquefaction F.S.=CRRm/CSRsf
Cebs	Energy Ratio, Borehole Dia., and Sampling Method Corrections
Cr	Rod Length Corrections
Cn	Overburden Pressure Correction
(N1)60	SPT after corrections, (N1)60=SPT * Cr * Cn * Cebs
d(N1)60	Fines correction of SPT
(N1)60f	(N1)60 after fines corrections, (N1)60f=(N1)60 + d(N1)60
Cq	Overburden stress correction factor
qc1	CPT after Overburden stress correction
dqc1	Fines correction of CPT
qc1f	CPT after Fines and Overburden correction, qc1f=qc1 + dqc1
qc1n	CPT after normalization in Robertson's method
Kc	Fine correction factor in Robertson's Method

qc1f CPT after Fines correction in Robertson's Method
Ic Soil type index in Suzuki's and Robertson's Methods
(N1)60s (N1)60 after settlement fines corrections
CSRm After magnitude scaling correction for Settlement calculation CSRm=CSRsf / MSF*
CSRfs Cyclic stress ratio induced by earthquake with user inputed fs
MSF* Scaling factor from CSR, MSF*=1, based on Item 2 of Page C.
ec Volumetric strain for saturated sands
dz Calculation segment, dz=0.050 ft
dsz Settlement in each segment, dz
dp User defined print interval
dsp Settlement in each print interval, dp
Gmax Shear Modulus at low strain
g_eff gamma_eff, Effective shear Strain
g*Ge/Gm gamma_eff * G_eff/G_max, Strain-modulus ratio
ec7.5 Volumetric Strain for magnitude=7.5
Cec Magnitude correction factor for any magnitude
ec Volumetric strain for unsaturated sands, ec=Cec * ec7.5
NoLiq No-Liquefy Soils

References:

1. NCEER Workshop on Evaluation of Liquefaction Resistance of Soils. Youd, T.L., and Idriss, I.M., eds., Technical Report NCEER 97-0022.
SP117. Southern California Earthquake Center. Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California. University of Southern California. March 1999.
2. RECENT ADVANCES IN SOIL LIQUEFACTION ENGINEERING AND SEISMIC SITE RESPONSE EVALUATION, Paper No. SPL-2, PROCEEDINGS: Fourth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, March 2001.
3. RECENT ADVANCES IN SOIL LIQUEFACTION ENGINEERING: A UNIFIED AND CONSISTENT FRAMEWORK, Earthquake Engineering Research Center, Report No. EERC 2003-06 by R.B Seed and etc. April 2003.

Note: Print Interval you selected does not show complete results. To get complete results, you should select 'Segment' in Print Interval (Item 12, Page C).

APPENDIX E

GENERAL EARTHWORK GRADING GUIDELINES

Proposed Cypress Sands Apartment Project
Chambers Avenue and Antelope Road
Menifee, Riverside County, California
Project No. 2978-CR

GEOTEK

GENERAL GRADING GUIDELINES

Guidelines presented herein are intended to address general construction procedures for earthwork construction. Specific situations and conditions often arise which cannot reasonably be discussed in general guidelines, when anticipated these are discussed in the text of the report. Often unanticipated conditions are encountered which may necessitate modification or changes to these guidelines. It is our hope that these will assist the contractor to more efficiently complete the project by providing a reasonable understanding of the procedures that would be expected during earthwork and the testing and observation used to evaluate those procedures.

General

Grading should be performed to at least the minimum requirements of governing agencies, Chapters 18 and 33 of the Uniform Building Code, CBC (2019) and the guidelines presented below.

Preconstruction Meeting

A preconstruction meeting should be held prior to site earthwork. Any questions the contractor has regarding our recommendations, general site conditions, apparent discrepancies between reported and actual conditions and/or differences in procedures the contractor intends to use should be brought up at that meeting. The contractor (including the main onsite representative) should review our report and these guidelines in advance of the meeting. Any comments the contractor may have regarding these guidelines should be brought up at that meeting.

Grading Observation and Testing

1. Observation of the fill placement should be provided by our representative during grading. Verbal communication during the course of each day will be used to inform the contractor of test results. The contractor should receive a copy of the "Daily Field Report" indicating results of field density tests that day. If our representative does not provide the contractor with these reports, our office should be notified.
2. Testing and observation procedures are, by their nature, specific to the work or area observed and location of the tests taken, variability may occur in other locations. The contractor is responsible for the uniformity of the grading operations; our observations and test results are intended to evaluate the contractor's overall level of efforts during grading. The contractor's personnel are the only individuals participating in all aspect of site work. Compaction testing and observation should not be considered as relieving the contractor's responsibility to properly compact the fill.
3. Cleanouts, processed ground to receive fill, key excavations, and subdrains should be observed by our representative prior to placing any fill. It will be the contractor's responsibility to notify our representative or office when such areas are ready for observation.

4. Density tests may be made on the surface material to receive fill, as considered warranted by this firm.
5. In general, density tests would be made at maximum intervals of two feet of fill height or every 1,000 cubic yards of fill placed. Criteria will vary depending on soil conditions and size of the fill. More frequent testing may be performed. In any case, an adequate number of field density tests should be made to evaluate the required compaction and moisture content is generally being obtained.
6. Laboratory testing to support field test procedures will be performed, as considered warranted, based on conditions encountered (e.g. change of material sources, types, etc.) Every effort will be made to process samples in the laboratory as quickly as possible and in progress construction projects are our first priority. However, laboratory workloads may cause in delays and some soils may require a **minimum of 48 to 72 hours to complete test procedures**. Whenever possible, our representative(s) should be informed in advance of operational changes that might result in different source areas for materials.
7. Procedures for testing of fill slopes are as follows:
    a) Density tests should be taken periodically during grading on the flat surface of the fill, three to five feet horizontally from the face of the slope.
    b) If a method other than over building and cutting back to the compacted core is to be employed, slope compaction testing during construction should include testing the outer six inches to three feet in the slope face to determine if the required compaction is being achieved.
8. Finish grade testing of slopes and pad surfaces should be performed after construction is complete.

Site Clearing

1. All vegetation, and other deleterious materials, should be removed from the site. If material is not immediately removed from the site it should be stockpiled in a designated area(s) well outside of all current work areas and delineated with flagging or other means. Site clearing should be performed in advance of any grading in a specific area.
2. Efforts should be made by the contractor to remove all organic or other deleterious material from the fill, as even the most diligent efforts may result in the incorporation of some materials. This is especially important when grading is occurring near the natural grade. All equipment operators should be aware of these efforts. Laborers may be required as root pickers.
3. Nonorganic debris or concrete may be placed in deeper fill areas provided the procedures used are observed and found acceptable by our representative.

Treatment of Existing Ground

1. Following site clearing, all surficial deposits of alluvium and colluvium as well as weathered or creep effected bedrock, should be removed unless otherwise specifically indicated in the text of this report.
2. In some cases, removal may be recommended to a specified depth (e.g. flat sites where partial alluvial removals may be sufficient). The contractor should not exceed these depths unless directed otherwise by our representative.
3. Groundwater existing in alluvial areas may make excavation difficult. Deeper removals than indicated in the text of the report may be necessary due to saturation during winter months.
4. Subsequent to removals, the natural ground should be processed to a depth of six inches, moistened to near optimum moisture conditions and compacted to fill standards.
5. Exploratory back hoe or dozer trenches still remaining after site removal should be excavated and filled with compacted fill if they can be located.

Fill Placement

1. Unless otherwise indicated, all site soil and bedrock may be reused for compacted fill; however, some special processing or handling may be required (see text of report).
2. Material used in the compacting process should be evenly spread, moisture conditioned, processed, and compacted in thin lifts six (6) to eight (8) inches in compacted thickness to obtain a uniformly dense layer. The fill should be placed and compacted on a nearly horizontal plane, unless otherwise found acceptable by our representative.
3. If the moisture content or relative density varies from that recommended by this firm, the contractor should rework the fill until it is in accordance with the following:
    a) Moisture content of the fill should be at or above optimum moisture. Moisture should be evenly distributed without wet and dry pockets. Pre-watering of cut or removal areas should be considered in addition to watering during fill placement, particularly in clay or dry surficial soils. The ability of the contractor to obtain the proper moisture content will control production rates.
    b) Each six-inch layer should be compacted to at least 90 percent of the maximum dry density in compliance with the testing method specified by the controlling governmental agency. In most cases, the testing method is ASTM Test Designation D 1557.
4. Rock fragments less than eight inches in diameter may be utilized in the fill, provided:
    a) They are not placed in concentrated pockets;
    b) There is a sufficient percentage of fine-grained material to surround the rocks;
    c) The distribution of the rocks is observed by, and acceptable to, our representative.

5. Rocks exceeding eight (8) inches in diameter should be taken off site, broken into smaller fragments, or placed in accordance with recommendations of this firm in areas designated suitable for rock disposal. On projects where significant large quantities of oversized materials are anticipated, alternate guidelines for placement may be included. If significant oversize materials are encountered during construction, these guidelines should be requested.
6. In clay soil, dry or large chunks or blocks are common. If in excess of eight (8) inches minimum dimension, then they are considered as oversized. Sheepsfoot compactors or other suitable methods should be used to break up blocks. When dry, they should be moisture conditioned to provide a uniform condition with the surrounding fill.

Slope Construction

1. The contractor should obtain a minimum relative compaction of 90 percent out to the finished slope face of fill slopes. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment.
2. Slopes trimmed to the compacted core should be overbuilt by at least three (3) feet with compaction efforts out to the edge of the false slope. Failure to properly compact the outer edge results in trimming not exposing the compacted core and additional compaction after trimming may be necessary.
3. If fill slopes are built "at grade" using direct compaction methods, then the slope construction should be performed so that a constant gradient is maintained throughout construction. Soil should not be "spilled" over the slope face nor should slopes be "pushed out" to obtain grades. Compaction equipment should compact each lift along the immediate top of slope. Slopes should be back rolled or otherwise compacted at approximately every 4 feet vertically as the slope is built.
4. Corners and bends in slopes should have special attention during construction as these are the most difficult areas to obtain proper compaction.
5. Cut slopes should be cut to the finished surface. Excessive undercutting and smoothing of the face with fill may necessitate stabilization.

UTILITY TRENCH CONSTRUCTION AND BACKFILL

Utility trench excavation and backfill is the contractors responsibility. The geotechnical consultant typically provides periodic observation and testing of these operations. While efforts are made to make sufficient observations and tests to verify that the contractors' methods and procedures are adequate to achieve proper compaction, it is typically impractical to observe all backfill procedures. As such, it is critical that the contractor use consistent backfill procedures.

Compaction methods vary for trench compaction and experience indicates many methods can be successful. However, procedures that "worked" on previous projects may or may not prove effective on a given site. The contractor(s) should outline the procedures proposed, so that we may discuss them **prior** to construction. We will offer comments based on our knowledge of site conditions and experience.

1. Utility trench backfill in slopes, structural areas, in streets and beneath flat work or hardscape should be brought to at least optimum moisture and compacted to at least 90 percent of the laboratory standard. Soil should be moisture conditioned prior to placing in the trench.
2. Flooding and jetting are not typically recommended or acceptable for native soils. Flooding or jetting may be used with select sand having a Sand Equivalent (SE) of 30 or higher. This is typically limited to the following uses:
   a) shallow (12 + inches) under slab interior trenches and,
   b) as bedding in pipe zone.

   The water should be allowed to dissipate prior to pouring slabs or completing trench compaction.
3. Care should be taken not to place soils at high moisture content within the upper three feet of the trench backfill in street areas, as overly wet soils may impact subgrade preparation. Moisture may be reduced to 2% below optimum moisture in areas to be paved within the upper three feet below sub grade.
4. Sand backfill should not be allowed in exterior trenches adjacent to and within an area extending below a 1:1 projection from the outside bottom edge of a footing, unless it is similar to the surrounding soil.
5. Trench compaction testing is generally at the discretion of the geotechnical consultant. Testing frequency will be based on trench depth and the contractors procedures. A probing rod would be used to assess the consistency of compaction between tested areas and untested areas. If zones are found that are considered less compact than other areas, this would be brought to the contractors attention.

JOB SAFETY

General

Personnel safety is a primary concern on all job sites. The following summaries are safety considerations for use by all our employees on multi-employer construction sites. On ground personnel are at highest risk of injury and possible fatality on grading construction projects. The company recognizes that construction activities will vary on each site and that job site safety is the contractor's responsibility. However, it is, imperative that all personnel be safety conscious to avoid accidents and potential injury.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of our field personnel on grading and construction projects.

1. Safety Meetings: Our field personnel are directed to attend the contractor's regularly scheduled safety meetings.
2. Safety Vests: Safety vests are provided for and are to be worn by our personnel while on the job site.
3. Safety Flags: Safety flags are provided to our field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

In the event that the contractor's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

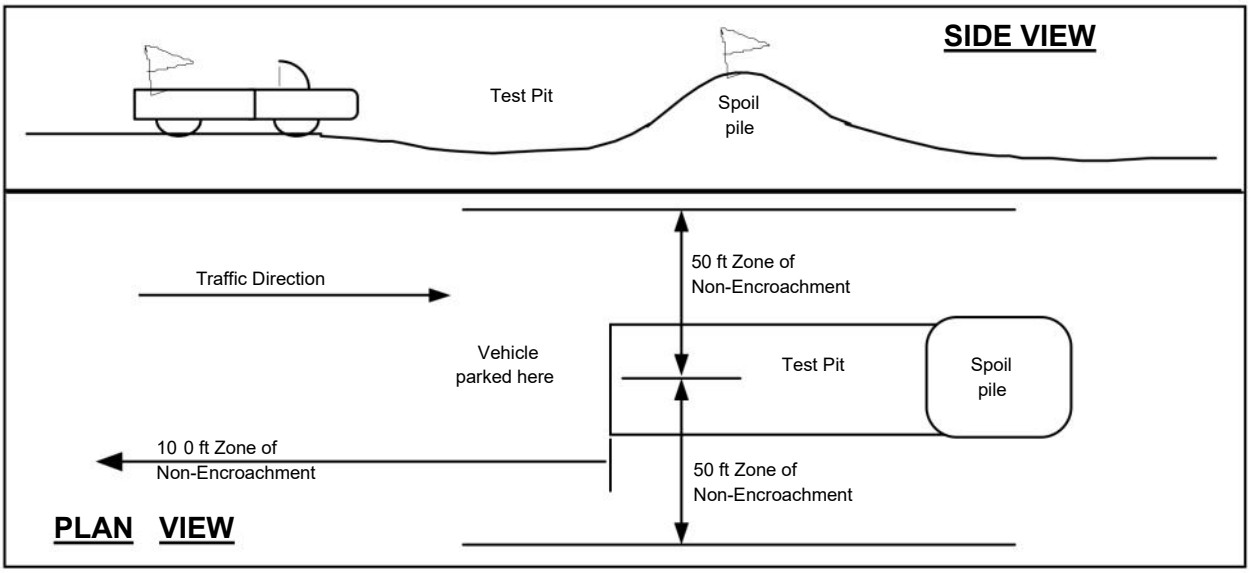
Test Pits Location, Orientation and Clearance

The technician is responsible for selecting test pit locations. The primary concern is the technician's safety. However, it is necessary to take sufficient tests at various locations to obtain a representative sampling of the fill. As such, efforts will be made to coordinate locations with the grading contractors authorized representatives (e.g. dump man, operator, supervisor, grade checker, etc.), and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The contractors authorized representative should direct excavation of the pit and safety during the test period. Again, safety is the paramount concern.

Test pits should be excavated so that the spoil pile is placed away from oncoming traffic. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates that the fill be maintained in a drivable condition. Alternatively, the contractor may opt to park a piece of equipment in front of test pits, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits (see diagram below). No grading equipment should enter this zone during the test procedure. The zone should extend outward to the sides approximately 50 feet from the center of the test pit and 100 feet in the direction of traffic flow. This zone is established both for safety and to avoid excessive ground vibration, which typically decreases test results.

TEST PIT SAFETY PLAN



Slope Tests

When taking slope tests, the technician should park their vehicle directly above or below the test location on the slope. The contractor's representative should effectively keep all equipment at a safe operation distance (e.g. 50 feet) away from the slope during testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location.

Trench Safety

It is the contractor's responsibility to provide safe access into trenches where compaction testing is needed. Trenches for all utilities should be excavated in accordance with CAL-OSHA and any other applicable safety standards. Safe conditions will be required to enable compaction testing of the trench backfill.

All utility trench excavations in excess of 5 feet deep, which a person enters, are to be shored or laid back. Trench access should be provided in accordance with OSHA standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

Our personnel are directed not to enter any excavation which;

1. is 5 feet or deeper unless shored or laid back,
2. exit points or ladders are not provided,
3. displays any evidence of instability, has any loose rock or other debris which could fall into the trench, or

4. displays any other evidence of any unsafe conditions regardless of depth.

If the contractor fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraws and notifies their supervisor. The contractors representative will then be contacted in an effort to effect a solution. All backfill not tested due to safety concerns or other reasons is subject to reprocessing and/or removal.

Procedures

In the event that the technician's safety is jeopardized or compromised as a result of the contractor's failure to comply with any of the above, the technician is directed to inform both the developer's and contractor's representatives. If the condition is not rectified, the technician is required, by company policy, to immediately withdraw and notify their supervisor. The contractor's representative will then be contacted in an effort to effect a solution. No further testing will be performed until the situation is rectified. Any fill placed in the interim can be considered unacceptable and subject to reprocessing, recompaction or removal.

In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the contractor bring this to technicians attention and notify our project manager or office. Effective communication and coordination between the contractors' representative and the field technician(s) is strongly encouraged in order to implement the above safety program and safety in general.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

Appendix F

Construction Noise Modeling Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/08/2024
Case Description: Cypress Sands Residential Development

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Site Preparation	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80.0		50.0	0.0
Concrete Saw	No	20	90.0		50.0	0.0
Compactor (ground)	No	20	80.0		50.0	0.0
Excavator	No	40	85.0		50.0	0.0
Grader	No	40	85.0		50.0	0.0
Front End Loader	No	40	80.0		50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Backhoe	80.0	76.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	90.0	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Front End Loader			80.0	76.0	N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A				
	Total		90.0	87.4	N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A				

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/08/2024
Case Description: Cypress Sands Residential Development

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading	Residential	60.0	55.0	50.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20	85.0		50.0	0.0
Excavator	No	40	85.0		50.0	0.0
Grader	No	40	85.0		50.0	0.0
Front End Loader	No	40	80.0		50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	85.0	78.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	80.0	76.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Tractor			84.0	80.0	N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A				
		Total	85.0	87.5	N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A				

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/08/2024
Case Description: Cypress Sands Residential Development

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building Construction	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20	85.0		50.0	0.0
Man Lift	No	20	85.0		50.0	0.0
Concrete Mixer Truck	No	40	85.0		50.0	0.0
Slurry Trenching Machine	No	50	82.0		50.0	0.0
Slurry Trenching Machine	No	50	82.0		50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)											
Day			Evening			Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	85.0	78.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	85.0	78.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slurry Trenching Machine	82.0	79.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slurry Trenching Machine	82.0	79.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

| | | |

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/08/2024
Case Description: Cypress Sands Residential Development

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Paving	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20	80.0		50.0	0.0
Front End Loader	No	40	80.0		50.0	0.0
Paver	No	50	85.0		50.0	0.0
Water Jet deleading	No	20	85.0		50.0	0.0
Roller	No	20	85.0		50.0	0.0
Welder / Torch	No	40	73.0		50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compactor (ground)	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	80.0	76.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	85.0	82.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Jet deleading	85.0	78.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	85.0	78.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Welder / Torch			73.0	69.0	N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A				
		Total	85.0	85.5	N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A				

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/08/2024
Case Description: Cypress Sands Residential Development

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40	85.0		50.0	0.0
Water Jet deleading	No	20	85.0		50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)				Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Mixer Truck	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Jet deleading	85.0	78.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Appendix G

HVAC Unit Specifications



An Efficient Reliable System that's Ideal for Small Outdoor Spaces

SYSTEM FEATURES

- Anti-corrosive fin coating
- Traditional unitary line set sizes
- Quiet operation

OUTDOOR FEATURES

- Factory installed basepan heater
- Factory installed crankcase heater
- Low voltage controls
- 24V Interface pre-installed
- Standard heat and high heat options
- Auto-restart function
- Condenser high temp protection

INDOOR FEATURES

- Modes: Cool, Heat, Dry, Fan, Auto
- 4-way installation
  (Up flow, Down flow, Right, Left)
- New aluminum coil
- Automatic airflow technology with static pressure up to 0.8 inWG
- Less than 2% air leakage
- Easy maintenance

Heat Pump with Basepan Heater

Inverter-driven, variable speed, rotary compressor

Up to 18.0 SEER2

Up to 10.0 HSPF2

Sizes: 18 / 24 / 30 / 36 / 48 / 60

KEY FEATURES

Minimal Footprint
A low-profile, unobtrusive outdoor unit makes this system an ideal option for homes with zero lot lines or limited outdoor space.

Whole-Home Solution
This versatile, energy efficient system can be easily retrofitted to combine with existing connections, providing an efficiency upgrade for your entire home.

CONTROLS

Built-in 24V Interface for third-party thermostat control

OPTIONAL ACCESSORIES

Electric heater kit

7-day programmable wired controller

LIMITED WARRANTY*

10-year limited to original purchaser on compressor and parts upon timely registration. Otherwise, 5 years.

*For residential applications. See warranty for full details.

Carrier

SPECIFICATIONS:

38MURA Outdoor Unit							
Heat Pump (Standard Heat)							
System							
Outdoor Size		1.5T	2T	2.5T	3T	4T	5T
Outdoor Model		38MURAQ18AA3	38MURAQ24AA3	38MURAQ30AA3	38MURAQ36AA3	38MURAQ48AA3	38MURAQ60AA3
Electrical							
Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
MCA	A.	16	19	20	24	34	34
Recommended Fuse Size	A.	20	20	25	25	35	35
MOPA - Fuse Rating	A.	20	30	35	40	50	60
Short Circuit Current Rating (SCCR)	kA	2.4	2.4	2.4	2.4	2.4	2.4
Operating Range							
Cooling Outdoor DB Min - Max	° F(° C)	5~130 (-15~55)	5~130 (-15~55)	5~130 (-15~55)	5~130 (-15~55)	5~130 (-15~55)	5~130 (-15~55)
Heating Outdoor DB Min - Max	° F(° C)	-5~86 (-15~30)	-5~86 (-15~30)	-5~86 (-15~30)	-5~86 (-15~30)	-5~86 (-15~30)	-5~86 (-15~30)
Piping							
Total Piping Length	ft (m)	98 (30)	164 (50)	164 (50)	213 (65)	213 (65)	213 (65)
Piping Lift*	ft (m)	65 (20)	82 (25)	82 (25)	98 (30)	98 (30)	98 (30)
Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
Pipe Connection Size - Suction	in (mm)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	7/8 (22)
Refrigerant							
Refrigerant Type		R410A	R410A	R410A	R410A	R410A	R410A
Charge	lbs (kg)	3.53 (1.6)	4.63 (2.1)	6.72 (3.05)	8.16 (3.7)	10.4 (4.7)	10.8 (4.9)
Add'l Refrigerant (between Std & Max Piping Lngths)	Oz/ft (g/m)	0.69 (65)	0.69 (65)	0.69 (65)	0.69 (65)	0.69 (65)	0.69 (65)
Metering Device		EEV	EEV	EEV	EEV	EEV	EEV
Outdoor Coil							
Face Area	Sq. Ft.	5	5.9	8.18	8.14	13.53	13.36
No. Rows		2	2	2.6	3	2	3
Fins per inch		20	20	18	18	18	18
Circuits		4	6	6	6	8	14
Compressor							
Type		Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter
Model		KSN140D21UFZ	KTM240D57UMT	KTF250D22UMT	KTF250D22UMT	KTQ420D1UMU	KTQ420D1UMU
Oil Type		VG74	VG74	VG74	VG74	VG74	VG74
Oil Charge	Fl. Oz.	14.9	22.7	22.7	22.7	47.3	47.3
Rated Current	RLA	9	14	16	17.6	24	24.6
Airflow & Sound							
Airflow	CFM	1,450	1,765	3,000	2,235	4,500	4,412
Sound Pressure	dB(A)	54	60	62	61	59	61

* Condensing unit above or below indoor unit

PERFORMANCE:

38MURA Outdoor Unit							
Heat Pump (Standard Heat)							
Outdoor Size		1.5T	2T	2.5T	3T	4T	5T
M Ratings							
Indoor Size		18K	24K	30K	36K	48K	60K
Cooling Rated Capacity	Btu/h	18,000	24,000	30,000	36,000	47,000	57,000
Cooling Cap. Range Min - Max	Btu/h	5400~18700	7500~26000	9500~33000	8900~38900	10500~48000	4400~60200
SEER		19.0	19.4	19.5	18.0	17.3	18.0
EER		11.1	11.3	10.9	10.4	9.3	10.3
Heating Rated Capacity (47° F)	Btu/h	18,000	26,000	31,000	36,000	55,000	60,000
Heating Rated Capacity (17° F)	Btu/h	12,000	21,000	20,000	20,400	37,000	37,000
Heating Rated Capacity (5° F)	Btu/h	9,550	17,000	20,000	21,000	27,000	29,000
Heating Cap. Range Min - Max	Btu/h	5600~18700	5600~30000	12200~32000	6000~36400	11700~57000	11400~63100
HSPF		10.8	11.3	10.3	9.1	10.0	9.2
COP (47° F)	W/W	3.49	3.54	3.19	3.02	3.00	3.55
COP (17° F)	W/W	2.70	2.75	2.30	2.25	2.00	2.45
COP (5° F)	W/W	1.85	1.75	1.95	1.80	1.72	1.80
M1 Ratings							
Cooling Rated Capacity	Btu/h	18,000	24,000	30,000	36,000	47,000	57,000
Cooling Cap. Range Min - Max	Btu/h	5400~18700	7500~26000	9500~33000	8900~38900	10500~48000	4400~60200
SEER2		16.0	17.0	17.3	16.9	15.8	14.7
EER2		10.9	10.5	10.6	10.1	8.8	8.8
Heating Rated Capacity (47° F)	Btu/h	18,000	26,000	31,000	36,000	55,000	60,000
Heating Rated Capacity (17° F)	Btu/h	11,500	20,700	20,000	20,500	36,500	36,000
Heating Rated Capacity (5° F)	Btu/h	10,000	17,000	17,800	21,000	36,500	34,800
Heating Cap. Range Min - Max	Btu/h	5600~18700	5600~30000	12200~32000	6000~36400	11700~57000	11400~63100
HSPF2		8.8	9.2	8.5	8.2	9.4	8.5
COP (47° F)	W/W	3.50	3.45	3.25	3.39	3.15	3.45
COP (17° F)	W/W	2.75	2.40	2.45	2.40	2.30	2.35
COP (5° F)	W/W	1.90	2.00	1.75	1.88	1.98	1.89

Carrier

38MURA OUTDOOR UNIT

SPECIFICATIONS:

38MURA Outdoor Unit							
Heat Pump (High Heat)							
System							
Outdoor Size		1.5T - HH	2T - HH	2.5T - HH	3T - HH	4T - HH	5T - HH
Outdoor Model		38MURAQ18AB3	38MURAQ24AB3	38MURAQ30AB3	38MURAQ36AB3	38MURAQ48AB3	38MURAQ60AB3
Electrical							
Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
MCA	A.	16	20.5	23	41	42	42
Recommended Fuse Size	A.	20	25	25	45	45	45
MOCP - Fuse Rating	A.	20	35	35	50	50	60
Short Circuit Current Rating (SCCR)	kA	2.4	2.4	2.4	2.4	2.4	2.4
Operating Range							
Cooling Outdoor DB Min - Max	° F(° C)	-22~130 (-30~55)	-22~130 (-30~55)	-22~130 (-30~55)	-22~130 (-30~55)	-22~130 (-30~55)	-22~130 (-30~55)
Heating Outdoor DB Min - Max	° F(° C)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)
Piping							
Total Piping Length	ft (m)	98 (30)	164 (50)	164 (50)	213 (65)	213 (65)	213 (65)
Piping Lift*	ft (m)	65 (20)	82 (25)	82 (25)	98 (30)	98 (30)	98 (30)
Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
Pipe Connection Size - Suction	in (mm)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	7/8 (22)
Refrigerant							
Refrigerant Type		R410A	R410A	R410A	R410A	R410A	R410A
Charge	lbs (kg)	5.07 (2.3)	6.39 (2.9)	8.38 (3.8)	10.36 (4.7)	10.58 (4.8)	10.58 (4.8)
Add'l Refrigerant (between Std & Max Piping Lngths)	Oz/ft (g/m)	0.69 (65)	0.69 (65)	0.69 (65)	0.69 (65)	0.69 (65)	0.69 (65)
Metering Device		EEV	EEV	EEV	EEV	EEV	EEV
Outdoor Coil							
Face Area	Sq. Ft.	5.9	8.16	8.16	14.08	13.53	13.29
No. Rows		2	2	3	1.6	2	2.6
Fins per inch		20	20	20	18	18	20
Circuits		6	4	4	8	8	10
Compressor							
Type		Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter
Model		KTM240D57UMT	KTM240D57UMT	KTF310D43UMT	EAPQ420D1UMUA	EAPQ420D1UMUA	EAPQ440D1UMUA
Oil Type		VG74	VG74	VG74	VG74	VG74	VG75
Oil Charge	Fl. Oz.	22.7	22.7	33.8	49.4	49.4	43.96
Rated Current	RLA	10	15	16.5	32	33	28
Airflow & Sound							
Airflow	CFM	1,279	3,000	3,000	4,500	4,412	4,500
Sound Pressure	dB(A)	58	64	62	64	64	64

* Condensing unit above or below indoor unit

PERFORMANCE:

38MURA Outdoor Unit							
Heat Pump (High Heat)							
Outdoor Size		1.5T - HH	2T - HH	2.5T - HH	3T - HH	4T - HH	5T - HH
M Ratings							
Indoor Size		18K	24K	30K	36K	48K	60K
Energy Star		YES	YES	NO	NO	NO	NO
Cooling Rated Capacity	Btu/h	18,000	24,000	30,000	36,000	47,000	55,000
Cooling Cap. Range Min - Max	Btu/h	6900~21000	6400~27000	10400~33600	12000~47400	18000~48000	18000~56000
SEER		20.0	20.0	18.0	18.0	16.0	16.4
EER		12.5	12.5	11	10.5	8.5	9
Heating Rated Capacity (47° F)	Btu/h	19,000	24,000	33,000	41,500	50,000	59,000
Heating Rated Capacity (17° F)	Btu/h	13,500	19,200	21,000	30,400	36,000	42,000
Heating Rated Capacity (5° F)	Btu/h	19,000	24,000	28,500	43,300	47,000	50,000
Heating Cap. Range Min - Max	Btu/h	2800~21000	10100~31000	12000~37000	9000~57200	20000~55000	20000-68000
HSPF		11.0	12.0	10.5	10.5	10.0	10.5
COP (47° F)	W/W	3.59	3.45	3.48	3.45	3.00	3.50
COP (17° F)	W/W	2.75	2.70	2.60	2.65	2.30	2.60
COP (5° F)	W/W	1.90	1.80	1.95	1.80	1.88	1.96
M1 Ratings							
Cooling Rated Capacity	Btu/h	18,000	24,000	30,000	36,000	47,000	55,000
Cooling Cap. Range Min - Max	Btu/h	6900~21000	6400~27000	10400~33600	12000~47400	18000~48000	18000-56000
SEER2		18.0	17.4	16.2	15.8	15.6	15.0
EER2		12.4	11.7	9.8	9.8	8.2	8.5
Heating Rated Capacity (47° F)	Btu/h	19,000	24,000	33,000	40,000	50,000	59,000
Heating Rated Capacity (17° F)	Btu/h	13,000	18,600	20,400	29,500	35,000	42,000
Heating Rated Capacity (5° F)	Btu/h	16,500	22,700	24,100	34,500	46,000	50,000
Heating Cap. Range Min - Max	Btu/h	2800~21000	10100~31000	12000~37000	9000~57200	20000~55000	20000-68000
HSPF2		9.3	10.0	8.9	9.5	9.4	9.0
COP (47° F)	W/W	3.60	3.40	3.30	3.35	3.15	3.00
COP (17° F)	W/W	2.50	2.40	2.30	2.40	2.30	2.60
COP (5° F)	W/W	2.00	1.85	1.80	1.95	1.90	1.96

Carrier

SPECIFICATIONS:

40MUAA Air Handler							
System							
Indoor Size		18K	24K	30K	36K	48K	60K
Indoor Model		40MUAAQ18XA3	40MUAAQ24XA3	40MUAAQ30XA3	40MUAAQ36XA3	40MUAAQ48XA3	40MUAAQ60XA3
Electrical							
Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
MCA	A.	2.5	4	4.5	5	7.5	9
Recommended Fuse Size	A.	5	5	5	10	10	10
MOPA - Fuse Rating	A.	15	15	15	15	15	15
Operating Range							
Cooling Indoor DB Min - Max	° F(° C)	60~90 (16~32)	60~90 (16~32)	60~90 (16~32)	60~90 (16~32)	60~90 (16~32)	60~90 (16~32)
Heating Indoor DB Min - Max	° F(° C)	32~86(0~30)	32~86(0~30)	32~86(0~30)	32~86(0~30)	32~86(0~30)	32~86(0~30)
Piping							
Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
Pipe Connection Size - Suction	in (mm)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	7/8 (22)
Refrigerant							
Refrigerant Type		R410A	R410A	R410A	R410A	R410A	R410A
Metering Device		EEV	EEV	EEV	EEV	EEV	EEV
Indoor Coil							
Face Area	Sq. Ft.	3	3	3.8	3.8	3.8	4.88
No. Rows		3	3	4	4	4	5
Fins Per Inch		20	20	20	20	20	20
Circuits		6	6	10	10	10	14
Airflow & Sound							
Number of Fan Speeds (low/med/high/turbo)		4	4	4	4	4	4
Airflow (lowest to highest)	CFM	488/529/576/618	629/694/759/824	712/806/894/1088	865/971/1082/1188	906/1094/1282/1471	1135/1359/1582/1806
Cooling Sound Pressure (low to high)	dB(A)	30.5/31.4/33.4/35.2	33.6/36.6/38.7/40.4	37.7/41.3/43.0/45.6	40.2/43.2/45.7/48.0	42.5/47.1/50.3/54.0	45.0/49.1/52.1/55.3
Heating Sound Pressure (low to high)	dB(A)	29.8/30.7/34.0/35.3	32.4/36.9/39.6/40.6	29.5/36.9/43.0/43.2	35.6/40.7/46.8/46.7	43.7/46.8/50.2/52.7	43.4/48.0/53.0/60.5
Max Static Pressure	In. W.G.	0.8	0.8	0.8	0.8	0.8	0.8
Field Drain Pipe Size O.D.	in (mm)	3/4 (19.1)	3/4 (19.1)	3/4 (19.1)	3/4 (19.1)	3/4 (19.1)	3/4 (19.1)

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01-DLS-019-CA-01 12/2022

Appendix H

Traffic Impact Assessment

CYPRESS SANDS TOWNHOMES

TRAFFIC STUDY

CITY OF MENIFEE

JUNE 30, 20255

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1.0 INTRODUCTION

This report presents the methodology, findings, and conclusions of the Traffic Study (TS) prepared for the proposed Cypress Sands Townhomes project. The proposed project site is located at the southwest corner of the intersection of Antelope Road and Chambers Avenue in the City of Menifee. The proposed project includes 132 row townhomes.

2.1 Purpose of Traffic Study and Study Objectives

This report is intended to satisfy the requirements for a Traffic Study (TS) established by the City of Menifee. City of Menifee follows the *City of Menifee Engineering Department LOS Traffic Study Guidelines* (October 2020) for level of service analyses. The operational analysis includes a quantitative evaluation of the project's access and circulation operations. The study area, analysis scenarios, and analysis methodologies are based on the guidelines and on discussion with City Staff. The approved scoping agreement is included in Appendix A.

2.2 Project Location & Study Area

As stated earlier, the project is located at the southwest corner of the intersection of Antelope Road and Chambers Avenue in the City of Menifee. Figure 1 shows the regional location of the project. The project proposes 132 row town homes (single-family attached residential units). The project opening year is expected to be 2026. Figure 2 illustrates the site plan of the proposed project. Based on the trip generation and trip distribution of the proposed project, and based on discussion with City staff, this report analyzes the following intersections and roadway segments for traffic operations. Figure 3 illustrates the study intersections included in the Traffic Study

Study Intersections

1. Chatham Lane/ Chambers Avenue
2. Driveway 1/ Chambers Avenue
3. Antelope Road/ Chambers Avenue
4. Chatham Lane/ Tioga Lane
5. Driveway 2/ Tioga Lane
6. Antelope Road/ Tioga Lane
7. Chatham Lane/ McCall Boulevard
8. Antelope Road/ McCall Boulevard

Roadway Segments

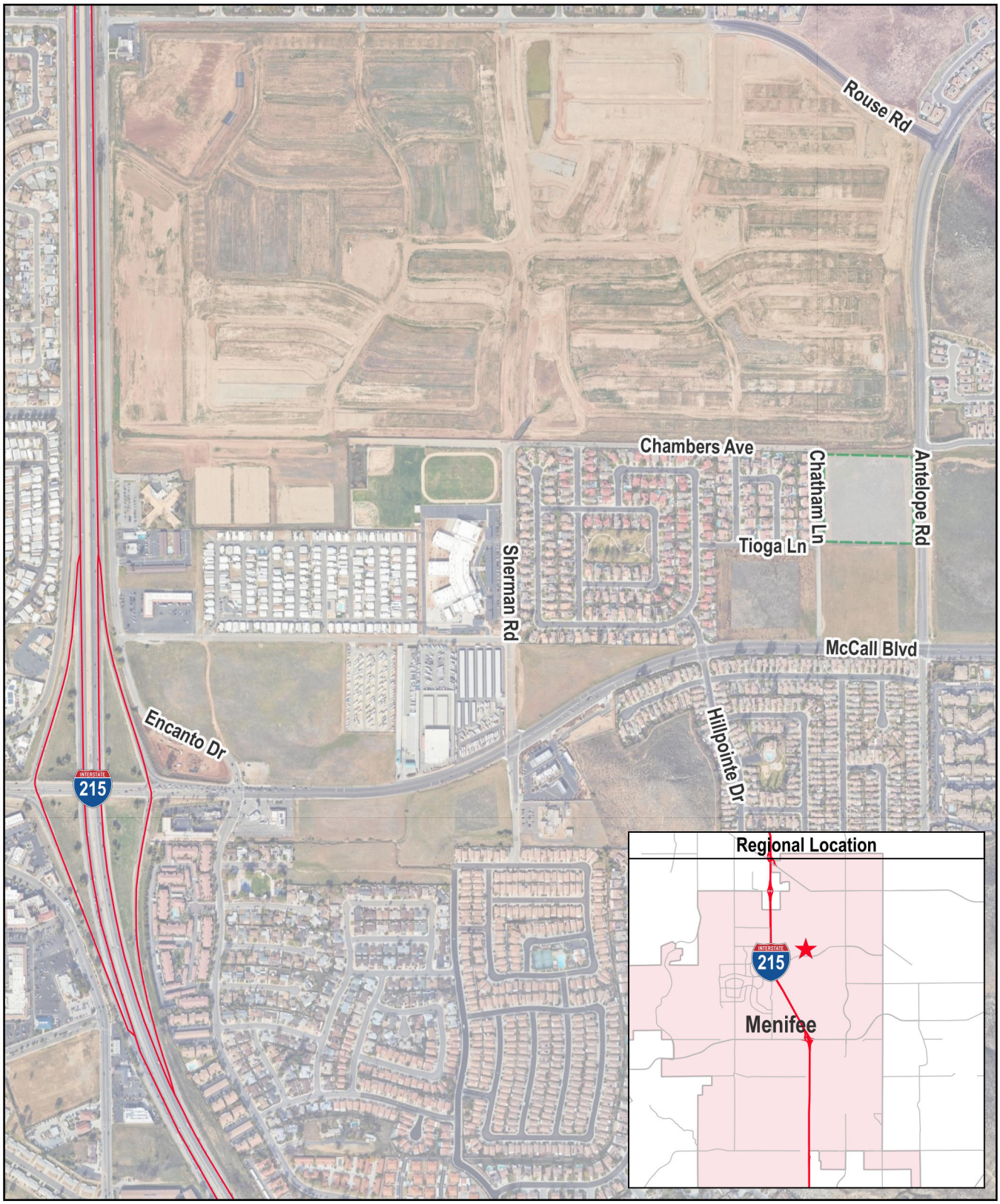
1. Antelope Road from Chambers Avenue to McCall Boulevard

2.3 Analysis Scenarios

Based on the City guidelines, this report analyzes traffic conditions for the following six scenarios:

1. Existing Conditions
2. Existing Plus Project Conditions
3. Opening Year (2026) without Project Conditions
4. Opening Year (2026) with Project Conditions
5. Opening Year (2026) Cumulative without Project Conditions
6. Opening Year (2026) Cumulative with Project Conditions

Consistent with the guidelines, this report analyzes weekday a.m. and p.m. peak hour conditions. In this area, the a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m. Roadway segment was analyzed during a 24-hour period using daily volume counts.



Legend

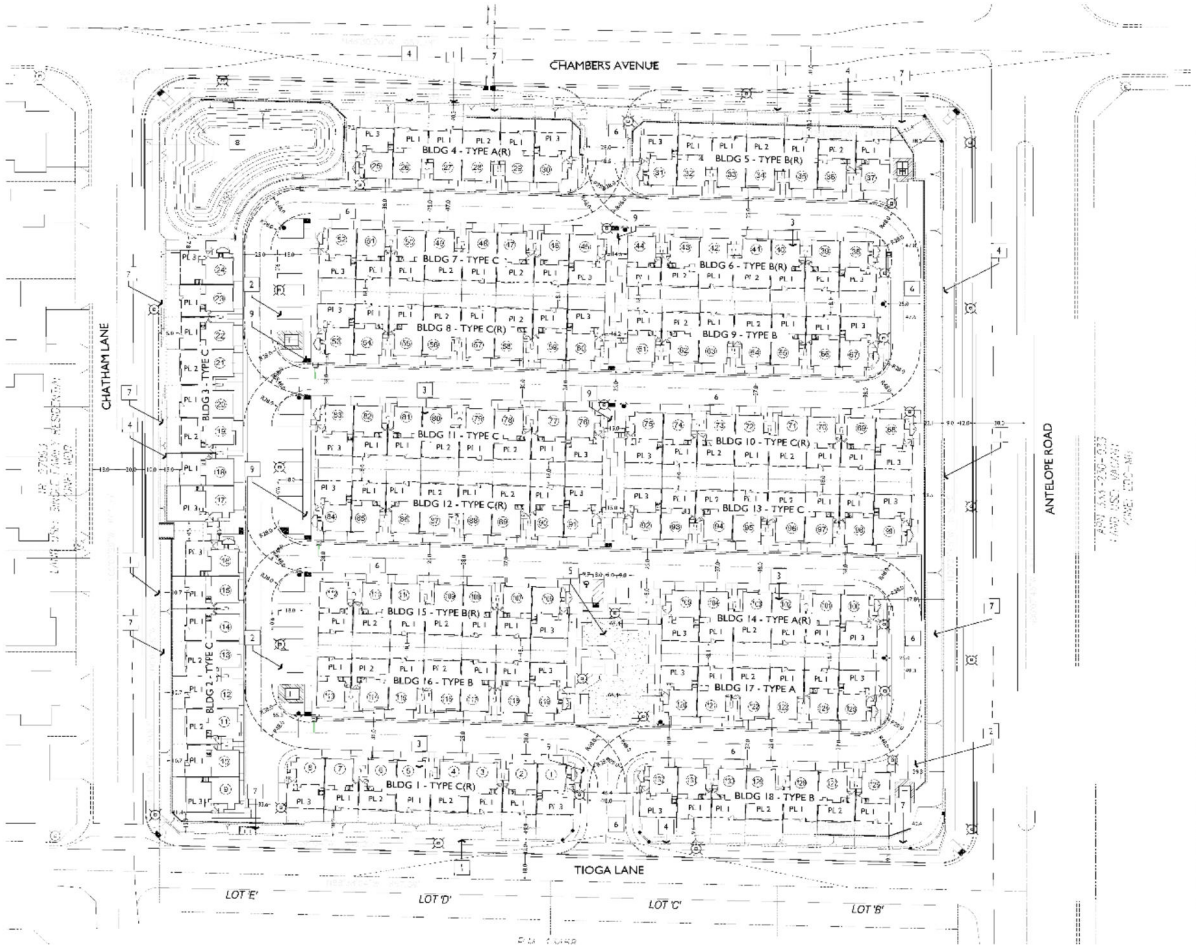
Project Boundary

FIGURE 1

Cypress Sands Townhomes
Regional Project Location

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PROJECT SUMMARY

PROPOSED MEDIUM DENSITY RESIDENTIAL PROJECT CONSISTING OF 18 TWO STORY ROW TOWNHOME BUILDINGS (132 UNITS) WITH ASSOCIATED AMENITY AREAS AND PARKING

EXISTING USE	VACANT
ZONE	MEDIUM DENSITY RESIDENTIAL (MDR)
A.P.N.	333-050-034
# OF UNITS	132
# OF BLDG'S	18
GROSS SITE	7.95 GROSS ACRES
NET SITE	7.34 ACRES
DENSITY	18.0 DU/ACRE
BLDG CODE	CALIFORNIA RESIDENTIAL CODE
CONST. TYPE	VB
OCCUPANCY	R3/U
FIRE SPRINKLERS	13D (PER CRC R313)
BLDG HEIGHT	30' @ RIDGE, 21' @ EAVE (2 STORY)
MAXIMUM BUILDING AREA = 14,970 S.F. (6 PLEX)	
FIRE FLOW = 1,625 GPM @ 20 PSI RESIDUAL FOR 2 HRS	
OFM-01B ITEM 28, CFC TABLE B105.1(1) AND B.105.1(2)	
HYDRANT SPACING PER OFM-01B ATTACHMENT 4	

PRODUCT SUMMARY

69 - PL 1	1,312 SF	3 BD + LOFT
33 - PL 2	1,422 SF	3 BD + LOFT
30 - PL 3	1,510 SF	4 BD

REQUIRED PARKING

DENSITY BONUS	
102 U @ 3 BD = 1.5 ST/U	153 STALLS
30 U @ 4 BD = 2.5 ST/U	75 STALLS
TOTAL REQ'D	228 STALLS

PROVIDED PARKING

GARAGE STALLS	264 STALLS
OPEN STALLS	31 STALLS
	295 TOTAL
BICYCLE PARKING	15 REQUIRED

OPEN SPACE SUMMARY

PRIVATE YARDS	34,946 SF (264 SF/UNIT)
COMMON AREA	6,256 SF (47 SF/UNIT)
PASSIVE OPEN	4,002 SF
SLOPE AREA	14,473 SF
WATER QUALITY	10,839 SF
OTHER OPEN	51,791 SF
NET SITE AREA	319,824 SF
DRIVES/PARKING	73,113 SF (22.9%)
BLDG. COVERAGE (50% ALLOWED)	124,404 SF (38.9%)
OPEN SPACE (30% REQ'D)	122,307 SF (38.2%)

UTILITY/SERVICES PROVIDERS

WATER SERVICE:	EASTERN MUNICIPAL WATER DISTRICT
SEWER SERVICE:	EASTERN MUNICIPAL WATER DISTRICT
GAS:	SOUTHERN CALIFORNIA GAS COMPANY
ELECTRICITY:	SOUTHERN CALIFORNIA EDISON
TEL./ CABLE:	AT&T/ FRONTIER COMMUNICATIONS
SCHOOL DISTRICT:	MENIFEE UNION
DEDICATIONS	9' AT ANTELOPE ROAD 6' AT CHAMBERS AVENUE 30' AT TIOGA LANE

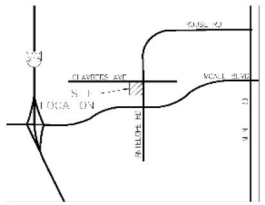
SITE PLAN KEYNOTES

1. PROPOSED RIGHT OF WAY
2. STANDARD PARKING STALL - 9' X 18'
3. 2-STORY TOWNHOME BUILDING
4. PERIMETER WALL
5. AMENITY AREA
6. FIRE LANE
7. LANDSCAPED SLOPE
8. WATER QUALITY BASIN
9. WALKWAY

SITE PLAN LEGEND

(#) UNIT NUMBER

PL 3 UNIT PLAN TYPE



MENIFEE

CYPRESS SANDS TOWNHOMES

CONCEPTUAL SITE PLAN

FIGURE 2

Cypress Sands Townhomes
Site Plan

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Legend

Project Boundary | Existing Study Area Intersections | Future Study Area Intersections | Future Roadways

FIGURE 3
Cypress Sands Townhomes
Study Area Intersections

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3.0 PROJECT DESCRIPTION

The proposed project proposes the construction of 132 row townhomes (single-family attached residential units). Project access will be provided via two driveways, one on the future Chambers Avenue and the other on the future Tioga Lane. The project will construct Chamber Avenue along the project frontage between Chatham Lane and Antelope Road. The project will also construct Tioga Lane along the project frontage between Chatham Lane and Antelope Road.

3.1 Project Trip Generation

Trip generation for the project is based on the rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (11th Edition) and are based on Land Use 215 "Single Family Attached Housing". Table A shows a summary of the project trip generation. As shown in Table A, the project is anticipated to generate 63 trips during the a.m. peak hour, 75 trips during the p.m. peak hour, and 950 daily trips.

Table A: Project Trip Generation

Land Use	Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
Sigle Family Attached Housing								
Trip Generation Rates [1]		0.12	0.36	0.48	0.34	0.23	0.57	7.2
Trip Generation	132 DU	16	47	63	44	31	75	950
Total Trip Generation		**16**	**47**	**63**	**44**	**31**	**75**	**950**

Notes: DU = Dwelling Unit

[1] Trip generation based on rates for Land Use 215 - "Single Family Attached Housing" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

3.2 Project Trip Distribution & Assignment

Project trip distribution patterns for the proposed project were developed based on the location of local and regional destinations, and in consultation with City staff. Figure 4 illustrates the project trip distribution for the proposed study intersections. The project trip generation was applied to the project trip distribution pattern to develop project trip assignment. Figure 5 illustrates the project trip assignment at the proposed study intersections.

4.0 LOS DEFINITIONS, PROCEDURES, AND THRESHOLDS

Level of service (LOS) is a measure of the quality of operational conditions within a traffic stream and is generally expressed in terms of such measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Levels range from A to F, with LOS A representing excellent (free-flow) conditions and LOS F representing extreme congestion. Consistent to the guidelines, the Highway Capacity Manual (HCM) procedures have been used to evaluate levels of service. This section discusses the LOS definitions, procedures, and thresholds used in this report.

4.1 Intersection Levels of Service

The analysis of traffic operations at intersections was conducted according to the *Highway Capacity Manual 7th Edition* (HCM, Transportation Research Board, Washington, D.C., June 2022) delay methodologies using Synchro 12 software. Under the HCM methodology, LOS for signalized intersections and all-way stop controlled intersections is based on the average delay experienced by vehicles traveling through an intersection, whereas for unsignalized two way stop controlled intersections (or one way for three legged intersections), the LOS is based on the worst approach where the minor leg has a shared lane and on the worst movement where the minor leg has dedicated turn lanes. Table B presents a brief description of each level of service letter grade, as well as the range of delays associated with each grade.



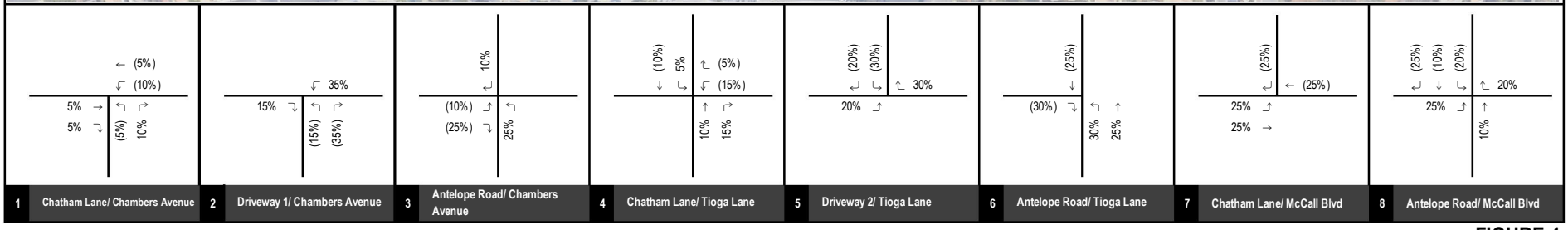


FIGURE 4

XXX%(YYY%) Inbound%(Outbound%) Percent

Cypress Sands Townhomes
Project Trip Distribution

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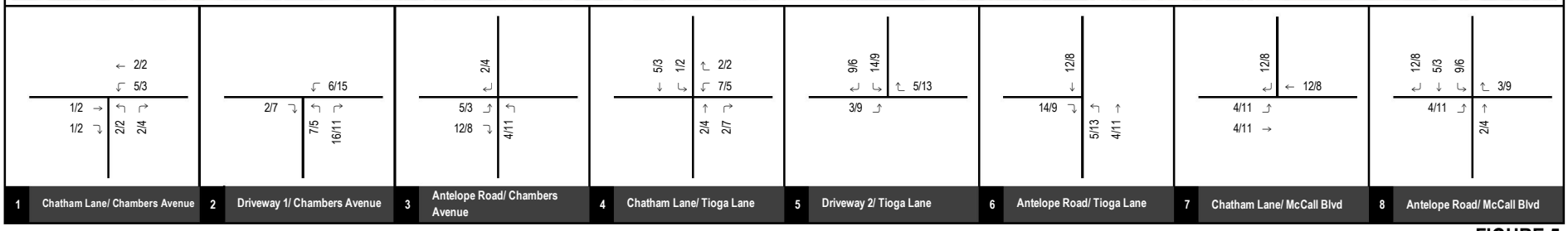


FIGURE 5

XX/YY AM/PM Trips

Cypress Sands Townhomes
Project Trip Assignment

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Table B : Intersection LOS Criteria

LOS	Description of Drivers' Perception and Traffic Operation	Delay in Seconds	
		Unsignalized	Signalized
A	This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable, or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	≤ 10	≤ 10
B	This level is assigned when the volume-to-capacity ratio is low and either progression is highly favorable, or the cycle length is short. More vehicles stop than with LOS A.	> 10 and ≤ 15	> 10 and ≤ 20
C	This level is typically assigned when progression is favorable, or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	> 15 and ≤ 25	> 20 and ≤ 35
D	This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective, or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	> 25 and ≤ 35	> 35 and ≤ 55
E	This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	> 35 and ≤ 50	> 55 and ≤ 80
F	This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 50	> 80

Source: *Highway Capacity Manual, 7th Edition*

4.2 Roadway Segment Levels of Service

The City evaluates roadway segments by comparing average daily traffic (ADT) volumes to street capacity. Capacity is a measure of the ability of the street system to meet and serve the demands placed on it. Table C illustrates the Roadway Segment Capacity Thresholds based on roadway classification. The capacity of a roadway is affected by a number of factors, including street width, roadway design, number of travel lanes, number of roadway intersections, number of driveways, presence of on-street parking, and traffic signal cycle length. The maximum ADT roadway capacity values are based on the City's LOS Traffic Study Guidelines.

4.3 Levels of Service Thresholds

The City of Menifee LOS Traffic Study Guidelines identifies LOS D as the standard for acceptable operating conditions for intersections except at constrained intersections and roadway segments in close proximity to I-215, where LOS E is accepted during peak hours. Intersections or roadway segments not meeting the required LOS may be conditioned for improvements towards meeting the LOS standards. Based on the guidelines, a project would not meet the LOS standard under the following conditions:

- If the pre-project condition at an intersection or roadway segment is at or better than the minimum acceptable LOS (LOS D, or LOS E at constrained locations near I-215) and the addition of project trips results in unacceptable LOS (LOS E or LOS F).
- If the pre-Project condition is LOS E or F, and the Project adds 50 or more peak hour trips to the intersection or roadway segment, the impact would be considered a "cumulative" project impact in which the project would be required to contribute a fair share payment toward reducing the impact.

Table C: Roadway Segment Capacity Thresholds

Roadway Classification	Number of Lanes	Maximum Two-Way Average Daily Traffic(ADT) Volume		
		LOS C	LOS D	LOS E
Collector	2	10,400	11,700	130,000
Secondary	4	20,700	23,300	25,900
Major	4	27,300	30,700	34,100
Arterial	4	29,600	33,400	37,000
Mountain Arterial	2	12,900	14,500	16,100
Mountain Arterial	4	25,500	28,700	31,900
Urban Arterial	6	45,000	50,600	56,300
Urban Arterial	8	69,000	78,000	87,000
Expressway	4	53,000	58,000	64,000
Expressway	6	79,000	87,000	95,000
Expressway	8	106,000	119,000	132,000
Freeway	4	80,000	91,000	100,000
Freeway	6	102,000	123,000	132,000
Freeway	8	136,000	164,000	176,000
Freeway	10	169,000	205,000	220,000
Ramp[1]	1	16,000	18,000	20,000

Footnotes:

1. Ramp Capacity is given as a one-way traffic volume.

Source: Riverside County Transportation Department

5.0 CUMULATIVE PROJECTS

Information regarding cumulative projects was obtained from the City of Menifee's Land Development/CIP Projects List (September 2024). All approved and pending development projects located within a 3-mile radius of the project site were identified and included in the analysis. The list of cumulative projects is provided in Appendix B and location of cumulative projects is shown in Figure 6.

Some of the citywide development projects are phased over multiple years. Depending on the timing of the proposed opening year cumulative scenario, the City of Menifee LOS Traffic Study Guidelines recommend using absorption rates that assume partial buildout of these phased projects. For a typical opening year scenario that is about 2-3 years into the future following absorption rates are recommended:

- <= 100 dwelling units (assume 100% complete)
- 101 to 249 dwelling units (assume 50% complete)
- >= 250 dwelling units (assume 25% complete)
- Non-residential uses (assume 100% complete)

Trip generation for cumulative projects is provided in Appendix C and net trip assignment for cumulative projects is shown in Figure 7.

6.0 VOLUME DEVELOPMENT METHODOLOGY

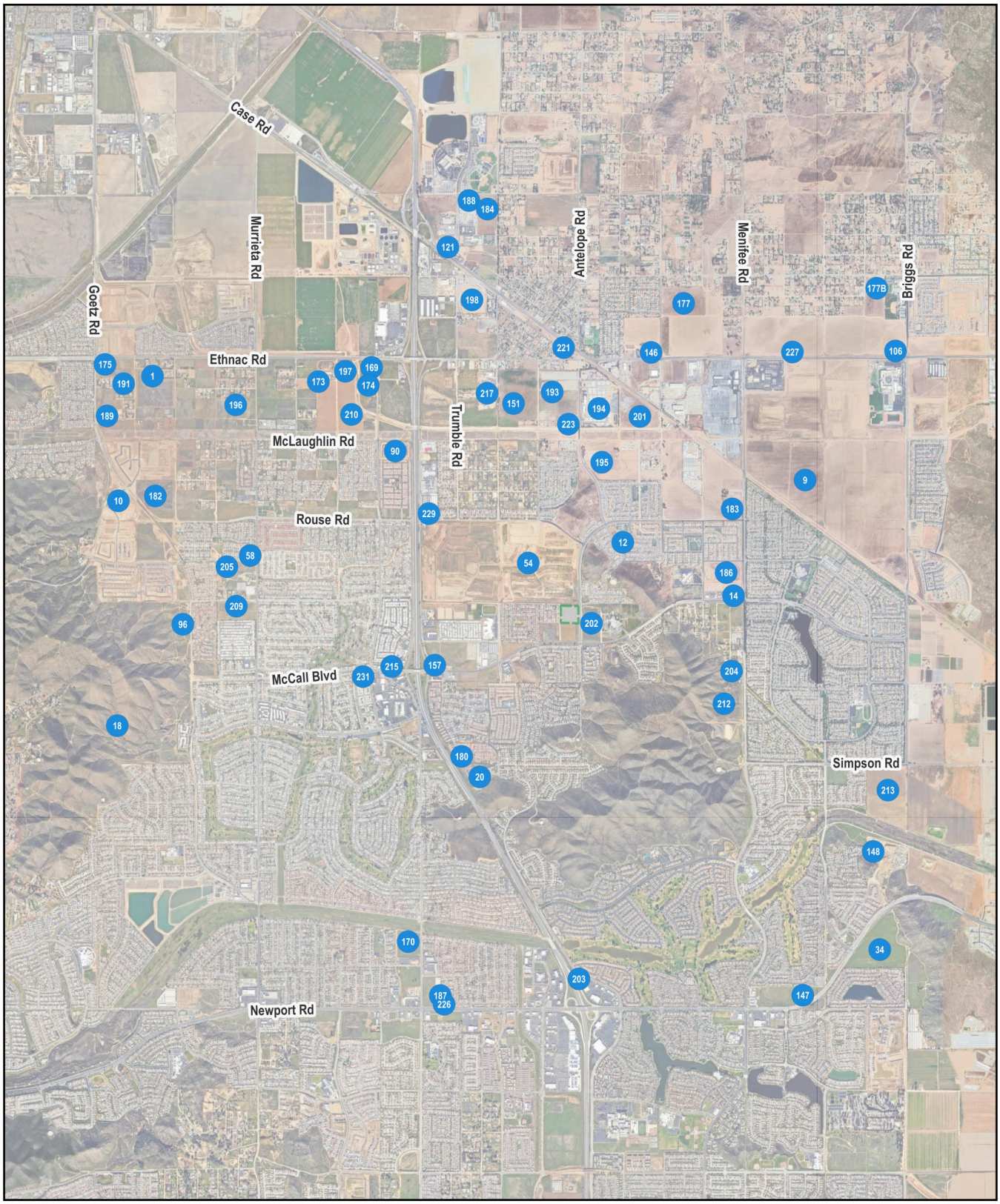
Forecast traffic volumes at study intersections were developed based on discussion with City staff and consistent with the City of Menifee LOS Traffic Study Guidelines. This section discusses the volume development methodology used to forecast future traffic volumes.

6.1 Existing Traffic Volumes

Existing traffic volumes for intersections and roadway segments are based on peak hour intersection turn movement counts and daily counts collected by Counts Unlimited Inc. in February 2025. The counts included vehicle classification and are contained in Appendix D.

The vehicle classification counts were converted to Passenger Car Equivalent (PCE) volumes using PCE factors. Passenger Car Equivalent is the number of passenger cars that will result in the same operational conditions as a single heavy vehicle of a particular type under identical roadway, traffic, and control conditions. PCE factors are used to convert counts of heavy vehicles into counts of passenger cars such that a mixed flow of heavy and light vehicles is converted to an equivalent traffic stream consisting entirely of passenger cars. The City Guidelines does not provide PCE factors therefore PCE factors provided in the County of Riverside, *Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled* (December 2020) were used for this analysis. Consistent with the County of Riverside guidelines, PCE volumes at the study intersections were calculated by using a PCE factor of 1.5 for 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for trucks with 4 or more axles. Detailed volume development worksheets are included in Appendix E.

The construction of the Chambers Avenue and Tioga Lane along the project frontage will affect the traffic flow in the project vicinity. The southbound and northbound traffic from Antelope Road can now directly access the community west of Chatham Lane without going to McCall Boulevard and then going north on Chatham Lane. Therefore, manual rerouting of traffic flow on Antelope Road was applied to the existing traffic volumes. Traffic volume rerouting adjustments are shown in Appendix E. Traffic volumes for Existing Plus Project conditions were developed by adding trips generated by the proposed project to the adjusted existing traffic volumes. Detailed volume development worksheets for intersection and roadway segments are included in Appendix E.



Legend

Cumulative Project Map ID

Project Boundary

FIGURE 6

Cypress Sands Townhomes
Cumulative Project Locations

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FIGURE 7

XXX / YYY AM / PM Trips

Cypress Sands Townhomes
Cumulative Projects Net Trip Assignment

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6.2 Opening Year Traffic Volumes

Traffic volumes for Opening Year Without Project conditions for intersection and roadway segments were developed by applying an annual growth rate of 2 percent per year for 1 year (2025 to 2026) to the adjusted existing traffic volumes.

Traffic volumes for Opening Year With Project conditions for intersection and roadway segments were developed by adding trips generated by the proposed project to the Opening Year Without Project traffic volumes. Detailed volume development worksheets are included in Appendix E.

6.3 Opening Year Cumulative Traffic Volumes

Traffic volumes for Opening Year Cumulative Without Project conditions for intersection and roadway segments were developed by adding trips generated by the cumulative projects to the Opening Year Without Project traffic volumes. Detailed volume development worksheets are included in Appendix E.

Traffic volumes for Opening Year Cumulative With Project conditions for intersection and roadway segments were developed by adding trips generated by the proposed project to the Opening Year Cumulative Without Project traffic volumes. Detailed volume development worksheets are included in Appendix E.

7.0 EXISTING CONDITIONS

This section discusses the existing transportation conditions in the study area.

7.1 Existing Roadway Conditions

The Menifee Roadway Classification has organized the roadways into the following six street types: Expressways, Urban Arterial, Arterial, Major, Secondary and Collector/Rural Collector and Local Streets.

- **Expressway/Limited Access Conventional Highway**: The Expressway/Limited Access Conventional Highway accommodates 6 to 8 through travel lanes, applicable to the Ethanac Road/SR-74 east-west corridor on the northern edge of the City of Menifee.
- **Urban Arterial**: The Urban Arterial is generally a 6-lane section with a curbed median.
- **Arterial**: An Arterial is a 4-lane section with a raised median. Shoulders on these roadways may accommodate exclusive bike lanes or share NEV/bike lanes. Sidewalks may be curb-adjacent or separated from the roadway by a landscaped parkway or on-street parking.
- **Major**: The Major is a 4-lane section with a painted median. Shoulders on these roadways may accommodate exclusive bike lanes or shared NEV/bike lanes. Sidewalks may be curb adjacent or separated from the roadway by a landscaped parkway.
- **Secondary**: The Secondary is a 4-lane roadway that provides median turn lanes and bike lanes or shared NEV/bike lanes when median turn lanes are not needed. The Secondary roadway provides a 100-foot' right-of-way.
- **Collector/Rural Collector and Local Streets**: Collector/Rural Collector and Local streets provide an important function for neighborhood-to-neighborhood interaction involving autos, bikes, pedestrians, and NEVs/golf carts. These are 2-lane, low-to-moderate speed connections. They provide an alternative to traveling on higher-capacity and higher-speed roads in order to navigate through the City of Menifee for short trips.

Regional access to the project site is provided by Interstate 215 to the west. Local access is provided by the following roadways:

- **Chatham Lane** is a is a two-lane local roadway oriented in the north-south direction and extends between Chambers Avenue and McCall Boulevard.

- **Antelope Road** is oriented in the north-south direction and borders the eastern edge of the project site. Antelope Road has two northbound lanes, one southbound lane and a striped median north of McCall Boulevard. South of McCall Boulevard Antelope Road is a two-lane road. In the City's General Plan, it is classified as a Major (4 Lanes, Divided) roadway north of McCall Boulevard and a Collector/Interconnected Local (2 Lanes) roadway south of McCall Boulevard.
- **Chambers Avenue** is a two-lane roadway oriented in the east-west direction and borders the western edge of the project site. Under existing conditions Chambers Avenue extends east of Antelope Road and west of Chatham Lane. In the City's General Plan, it is classified as a Secondary (4 Lanes, Undivided) roadway.
- **Tioga Lane** is a is a two-lane local roadway oriented in the east-west direction. Under existing conditions Tioga Lane extends west of Chatham Lane.
- **McCall boulevard** is a four-lane roadway with a striped median and is oriented in the east-west direction. In the City's General Plan, it is classified as an Urban Arterial (6 Lanes, Divided) roadway.

7.2 Existing Transit Service, Bicycle & Pedestrian Facilities

Public transportation services within the City of Menifee includes bus transit service provided by the Riverside Transit Agency (RTA) and commuter rail service provided by Metrolink.

Bus Service: RTA has two transit lines that have routes that provide service near the project site. This service is further described below.

- **Route 61** provides service near the project site. The nearest stops are located on:
    1. Encanto Drive south of McCall Boulevard (approx. 0.9 miles from the project site)
    2. McCall Boulevard west of Sun City Boulevard (approx. 1.3 miles from the project site)

Route 61 provides service at varying headways during the day. Route 61 connects the project site to the Perris Station Transit Center towards north and Promenade Mall in Temecula towards south.

- **Route 74** provides service near the project site. The nearest stops are located on:
    1. Sun City Boulevard near Vons Supermarket (approx. 1.5 miles from the project site)
    2. Cherry Hills Boulevard west of Bradley Boulevard (approx. 1.6 miles from the project site)

Route 74 provides service at varying headways during the day. Route 74 connects the project site to the Hemet Valley Mall towards north and Sun City Library towards south.

Route 61 and Route 74 do not have stops within walking distance of the project.

Commuter Rail Service: Commuter rail service is provided by Metrolink, which is operated by the Southern California Regional Rail Authority (SCRRA). Metrolink train service is available between the counties of Ventura, Los Angeles, San Bernardino, Orange, Riverside, and north San Diego. The area is served by the Perris – Downtown Metrolink Station and is approximately 7.3 miles north of the project site.

Bicycle and Pedestrian Facilities: There is existing sidewalk on McCall Boulevard in the eastbound direction. There are no existing sidewalks on Chatham Lane and Antelope Road bordering the project site. This is primarily because the roadways are not built out yet.

There is existing bike lane on Antelope Road in the northbound direction.

Figure 8 illustrates the existing bus stops, existing sidewalks and existing bike lanes in the project vicinity.

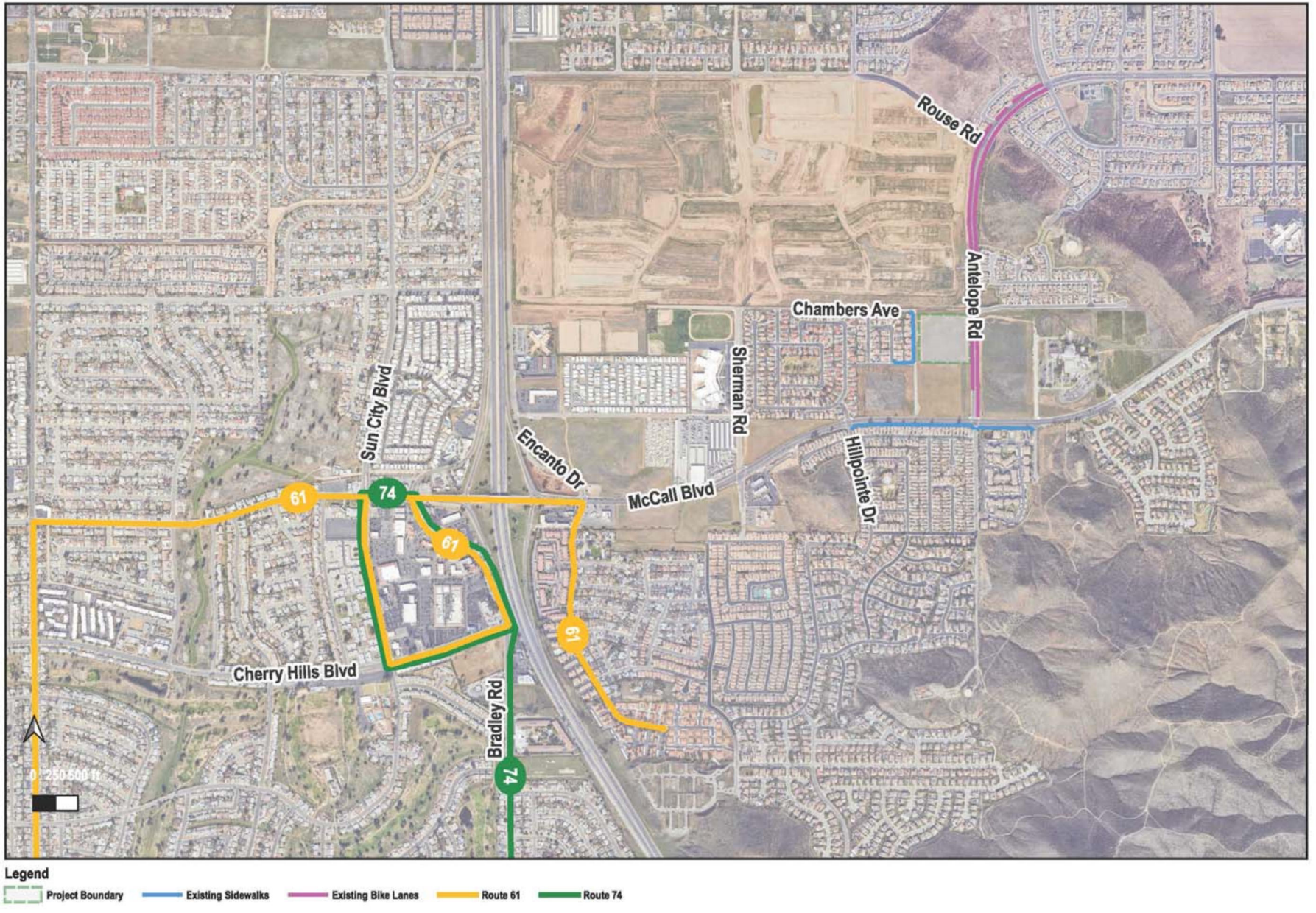


FIGURE 8

Cypress Sands Townhomes
Existing Transit, Bicycle & Pedestrian Facilities

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Q:\Rincon - Cypress Sands Apartments\Analysis\Z40 Transit Bike Ped (3/28/2025)

7.3 Existing Conditions - Levels of Service

An intersection level of service (LOS) analysis was conducted for Existing Conditions to determine current circulation system performance. Figure 9 shows the existing lane geometrics and stop controls at the study intersections. Existing traffic volumes at study intersections are shown in Figure 10. The existing levels of service for the study area intersections are summarized in Table D. Detailed Level of Service (LOS) calculation worksheets are included in Appendix F. As shown in Table D, all existing study area intersections are currently operating at a satisfactory level of service during both a.m. and p.m. peak hours.

The existing levels of service for the study area roadway segment is summarized on Table E. As shown in Table E, the study area roadway segment is currently operating at satisfactory level of service.

7.4 Existing Plus Project Conditions - Levels of Service

An intersection level of service (LOS) analysis was conducted for existing plus project conditions to determine current circulation system performance. Existing Plus Project traffic volumes at study intersections are shown in Figure 11. The Existing Plus Project levels of service for the study area intersections are summarized in Table D. Detailed Level of Service (LOS) calculation worksheets are included in Appendix F. As shown in Table D, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours.

The existing plus project levels of service for the study area roadway segment is summarized on Table E. As shown in Table E, the study area roadway segment is forecast to operate at satisfactory level of service.

8.0 OPENING YEAR (2026) CONDITIONS

This section discusses opening year transportation conditions in the study area. It is anticipated that the project will open in 2026. For the opening year 2026 conditions transit service and pedestrian facilities are anticipated to remain the same as under existing conditions.The construction of the Chambers Avenue and Tioga Lane along the project frontage will affect the traffic flow around the project boundary. The southbound and northbound traffic from Antelope Road can now directly access the community west of Chatham Lane without going to McCall Boulevard and then going north on Chatham Lane. Figure 12 shows the opening year lane geometrics and stop controls at the study intersections. There is a likelihood that turn restrictions will be imposed at the intersection of Chatham Lane/McCall Boulevard as part of the Menifee Valley Project. If left turns are restricted at this intersection, the delays at this intersection will be less than those reported.

8.1 Opening Year Without Project - Levels of Service

An intersection level of service (LOS) analysis was conducted for opening year conditions to determine current circulation system performance. Opening year without project traffic volumes at study intersections are shown in Figure13. The opening year without project levels of service for the study area intersections are summarized in Table F. Detailed Level of Service (LOS) calculation worksheets are included in Appendix F. As shown in Table F, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours.

The opening year without project levels of service for the study area roadway segment is summarized on Table G. As shown in Table E, the study area roadway segment is forecast to operate at satisfactory level of service.

8.2 Opening Year With Project- Levels of Service

An intersection level of service (LOS) analysis was conducted for opening year with project conditions to determine current circulation system performance. Opening year with project traffic volumes at study intersections are shown in Figure14. The opening year with project levels of service for the study area intersections are summarized in Table F. Detailed Level of Service (LOS) calculation worksheets are included in Appendix F. As shown in Table F, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours.

The opening year project levels of service for the study area roadway segment is summarized on Table G. As shown in Table G, the study area roadway segment is forecast to operate at satisfactory level of service.



1. Chatham Lane/ Chambers Avenue	2. Driveway 1/ Chambers Avenue	3. Antelope Road/ Chambers Avenue	4. Chatham Lane/ Tioga Lane	5. Driveway 2/ Tioga Lane	6. Antelope Road/ Tioga Lane	7. Chatham Lane/ McCall Blvd	8. Antelope Road/ McCall Blvd
STOP	Does Not Exist	STOP	STOP	Does Not Exist	Does Not Exist	STOP	O

FIGURE 9

Legend

Traffic Signal

STOP Stop Sign

O RT Overlap

d Defacto right turn

Cypress Sands Townhomes

Existing Intersection Geometrics and Stop Control

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1	2	3	4	5	6	7	8
Chatham Lane/ Chambers Avenu	Driveway 1/ Chambers Avenue	Antelope Road/ Chambers Avenu	Chatham Lane/ Tioga Lane	Driveway 2/ Tioga Lane	Antelope Road/ Tioga Lane	Chatham Lane/ McCall Blvd	Antelope Road/ McCall Blvd
1 / 3 ↴	Does Not Exist	↓ 193 / 124 ↳ 0 / 1	← 1 / 2	Does Not Exist	Does Not Exist	↲ 2 / 2 ↳ 2 / 1 ↱ 59 / 1	↲ 159 / 104 ↓ 17 / 13 ↳ 23 / 10 ↱ 23 / 11
59 / 3 ↰		↰ 1 / 0	3 / 1 ↲			← 1097 / 705	← 977 / 591
		↰ 14 / 5	3 / 14 ↰			2 / 9 ↳	↰ 45 / 22
		↑ 108 / 163 ↱ 9 / 8	60 / 8 →			730 / 1111 →	82 / 132 ↳ 659 / 938 → 11 / 44 ↲ 44 / 14 ↰ 11 / 7 ↑ 48 / 24 ↱

FIGURE 10

XXX / YYY AM / PM Peak Hour Volume (In PCEs)

Cypress Sands Townhomes
Existing Peak Hour Traffic Volumes

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Table D: Existing Levels of Service

Intersection	LOS Std.	Control	Existing				Existing With Project			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 . Chatham Lane/ Chambers Avenue	D	TWSC	No Conflicting Movements		No Conflicting Movements		8.85	A	8.51	A
2 . Driveway 1/ Chambers Avenue	D	TWSC	Does Not Exist		Does Not Exist		8.36	A	0	A
3 . Antelope Road/ Chambers Avenue	D	TWSC	11	B	10.46	B	11	B	11.07	B
4 . Chatham Lane/ Tioga Lane	D	TWSC	8.3	A	8.34	A	9.02	A	8.76	A
5 Driveway 2/ Tioga Lane	D	TWSC	Does Not Exist		Does Not Exist		8.57	A	8.59	A
6 Antelope Road/ Tioga Lane	D	TWSC	Does Not Exist		Does Not Exist		8.4	A	8.38	A
7 Chatham Lane/ McCall Blvd	D	TWSC	29.3	D	17.1	C	17.5	C	12.77	B
8 Antelope Road/ McCall Blvd	D	Signal	19	B	18.5	B	19	B	18.7	B

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.

LOS = Level of Service

HCM analysis for TWSC intersections is based on the highest average delay for the worst movement and the addition of right turns can reduce the average delay for the approach in case of shared lanes on the minor leg. At the intersection of Chatham Lane & McCall Boulevard, the project adds southbound right turn volumes, resulting in a lower average delay for the worst case movement. It should be noted that the City might impose turn restrictions at the intersection of Chatham Lane/McCall Boulevard in future. This is unlikely to change the LOS at study intersections.

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Table E: Existing Roadway Segment Levels of Service

Roadway Segment	LOS Standard	Classification	Roadway Capacity	Without Project			With Project			V/C Delta
				Daily Volume	V/C	LOS	Daily Volume	LOS	V/C	
1 . Antelope Road between Chambers Avenue and McCall Boulevard	D	Major	25,575	1,842	0.072	A	2,366	A	0.092	0.020

Notes:

LOS = Level of Service, * = Exceeds Level of Service

Currently Antelope Road has 2 northbound Lanes and 1 southbound lane. The capacity had been calculated by applying a factor of 0.75 to the GP Roadway Capacity. Please note that traffic volumes are lower than the capacity of a 2 lane Collector for LOS C is (10,400).



1 Chatham Lane/ Chambers Avenu	2 Driveway 1/ Chambers Avenue	3 Antelope Road/ Chambers Avenu	4 Chatham Lane/ Tioga Lane	5 Driveway 2/ Tioga Lane	6 Antelope Road/ Tioga Lane	7 Chatham Lane/ McCall Blvd	8 Antelope Road/ McCall Blvd
1/2 →	← 9/2	8/4 ↲	6/5 ↓	9/6 ↲	2/0 ↲	14/10 ↲	163/112 ↲
2/5 ↲	↰ 5/3	187/124 ↓	1/2 ↳	14/9 ↳	209/8 ↓	2/1 ↳	22/16 ↓
54/5 ↰	7/0 ↰	0/1 ↳	↱ 2/2	↱ 5/13	14/9 ↲	↱ 49/1	32/16 ↳
↱ 2/4	↰ 6/15	↱ 1/0	← 3/0	← 3/0	6/13 ↰	← 1109/713	↱ 26/20
	2/7 ↲	↰ 14/5	↰ 7/5	3/9 ↳	121/11 →	6/20 ↳	← 977/591
	7/5 ↰	5/3 ↳	3/1 ↲			734/1122 →	↰ 45/22
	↱ 16/11	5/11 ↰	0/14 ↰				86/143 ↳
		12/8 ↲	55/12 ↑				659/938 →
		108/163 ↑	↱ 2/7				11/44 ↲
		↱ 9/8					42/14 ↰
							15/11 ↑
							↱ 48/24

FIGURE 11

XXX / YYY AM / PM Peak Hour Volume (In PCEs)

Cypress Sands Townhomes
Existing Plus Project Peak Hour Traffic Volumes

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FIGURE 12

Legend

Traffic Signal

Stop Sign

O RT Overlap

d Defacto right turn

Cypress Sands Townhomes

Opening Year Intersection Geometrics and Stop Control

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FIGURE 13

XXX / YYY AM / PM Peak Hour Volume (In PCEs)

Cypress Sands Townhomes
Opening Year Without Project Peak Hour Traffic Volumes

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Table F: Opening Year Levels of Service

Intersection	LOS Std.	Control	OY Without Project				OY With Project			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 . Chatham Lane/ Chambers Avenue	D	TWSC	8.76	A	8.54	A	8.85	A	8.51	A
2 . Driveway 1/ Chambers Avenue	D	TWSC		A		A	8.36	A		A
3 . Antelope Road/ Chambers Avenue	D	TWSC	10.83	B	10.79	B	11.02	B	11.12	B
4 . Chatham Lane/ Tioga Lane	D	TWSC	9.3	A	8.3	A	9	A	8.8	A
5 Driveway 2/ Tioga Lane	D	TWSC		A		A	8.57	A	8.59	A
6 Antelope Road/ Tioga Lane	D	TWSC	0.07	A		A	9.51	A	8.38	A
7 Chatham Lane/ McCall Blvd	D	TWSC	28.46	D	17.45	C	17.94	C	12.93	B
8 Antelope Road/ McCall Blvd	D	Signal	20.4	C	19.4	B	20.5	C	19.5	B

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.

LOS = Level of Service

Delays at some intersections are decreasing from existing conditions due to network changes resulting from the construction of Chambers Avenue and Tioga Lane between Chatham Lane and Antelope Road. Further, HCM analysis for TWSC intersections is based on the highest average delay for the worst movement and the addition of right turns can reduce the average delay for the approach in case of shared lanes on the minor leg. at the intersections of Chatham Lane/ McCall Blvd and Chatham Lane/Tioga Lane the project is adding southbound right turn volumes which is slightly reducing the average delay at the intersection for the worst-case movement.

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Table G: Opening Year Roadway Segment Levels of Service

Roadway Segment	LOS Standard	Classification	Roadway Capacity	Without Project			With Project			V/C Delta
				Daily Volume	V/C	LOS	Daily Volume	LOS	V/C	
1 . Antelope Road between Chambers Avenue and McCall Boulevard	D	Major	25,575	1,879	0.073	A	2,403	A	0.094	0.020

Notes:

LOS = Level of Service, * = Exceeds Level of Service

Currently Antelope Road has 2 northbound Lanes and 1 southbound lane. The capacity had been calculated by applying a factor of 0.75 to the GP Roadway Capacity. Please note that traffic volumes are lower than the capacity of a 2 lane Collector for LOS C is (10,400).



1 Chatham Lane/ Chambers Avenu	2 Driveway 1/ Chambers Avenue	3 Antelope Road/ Chambers Avenu	4 Chatham Lane/ Tioga Lane	5 Driveway 2/ Tioga Lane	6 Antelope Road/ Tioga Lane	7 Chatham Lane/ McCall Blvd	8 Antelope Road/ McCall Blvd
1 / 2 →	← 9 / 2	8 / 4 ↵	6 / 5 ↓	9 / 6 ↵	2 / 0 ↵	14 / 10 ↵	166 / 114 ↵
2 / 5 ↵	↰ 5 / 3	191 / 126 ↓	1 / 2 ↳	14 / 9 ↳	213 / 8 ↓	2 / 1 ↳	22 / 16 ↓
55 / 5 ↰ ↱	2 / 7 ↵	0 / 1 ↳	↱ 2 / 2	↱ 5 / 13	14 / 9 ↵	↱ 50 / 1	32 / 16 ↳
2 / 4	↰ 7 / 0	↱ 1 / 0	← 3 / 0	← 3 / 0	↰ ↑	← 1131 / 727	↱ 26 / 20
	↰ 6 / 15	↰ 14 / 5	↰ 7 / 5	3 / 9 ↵	6 / 13 ↰	6 / 20 ↵	← 997 / 603
	7 / 5 ↰ ↱	5 / 3 ↵	3 / 1 ↵		123 / 11 ↑	749 / 1144 →	↰ 46 / 22
	16 / 11	12 / 8 ↵	0 / 14 ↰ ↑				88 / 146 ↵
		5 / 11 ↰ ↑	56 / 12 ↑				672 / 957 →
		110 / 166 ↑ ↱	2 / 7 ↱				11 / 45 ↳
		9 / 8 ↱					43 / 14 ↰ ↑
							15 / 11 ↑
							49 / 24 ↱

FIGURE 14

XXX / YYY AM / PM Peak Hour Volume (In PCEs)

Cypress Sands Townhomes
Opening Year With Project Peak Hour Traffic Volumes

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9.0 OPENING YEAR (2026) CUMULATIVE CONDITIONS

This section discusses opening year cumulative transportation conditions in the study area. The intersection geometrics are anticipated to remain the same as under opening year conditions. For the opening year cumulative conditions, transit service and pedestrian facilities are anticipated to remain the same as under existing conditions.

9.1 Opening Year Cumulative Without Project - Levels of Service

An intersection level of service (LOS) analysis was conducted for opening year conditions to determine current circulation system performance. Opening year without project traffic volumes at study intersections are shown in Figure15. The opening year cumulative without project levels of service for the study area intersections are summarized in Table H. Detailed Level of Service (LOS) calculation worksheets are included in Appendix F. As shown in Table H, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours.

The opening year cumulative without project levels of service for the study area roadway segment is summarized on Table I. As shown in Table I, the study area roadway segment is forecast to operate at satisfactory level of service.

9.2 Opening Year Cumulative With Project - Levels of Service

An intersection level of service (LOS) analysis was conducted for opening year cumulative with project conditions to determine current circulation system performance. Opening year cumulative with project traffic volumes at study intersections are shown in Figure16. The opening year cumulative with project levels of service for the study area intersections are summarized in Table H. Detailed Level of Service (LOS) calculation worksheets are included in Appendix F. As shown in Table H, all study area intersections are forecast to operate at a satisfactory level of service during both a.m. and p.m. peak hours.

The opening year cumulative with project levels of service for the study area roadway segment is summarized on Table I. As shown in Table I, the study area roadway segment is forecast to operate at satisfactory level of service.

10.0 CIRCULATION IMPROVEMENTS

The City guidelines require that circulation improvements be recommended at any intersection which operates at an unsatisfactory level of service. These include conversion of stop control, signalization, changes to signal phasing, and/or addition of lanes as appropriate. No circulation improvements are recommended as all study area intersections and roadway segment are forecast to operate at a satisfactory level of service under all conditions.

11.0 SUMMARY & CONCLUSIONS

The proposed project is forecast to generate 63 trips during the a.m. peak hour, 75 trips during the p.m. peak hour, and 950 daily trips. Based on the LOS analysis. No operational deficiencies are caused by the proposed project, and no circulation improvements are recommended. All intersections and roadway segments are forecast to operate at satisfactory conditions under existing, opening year and opening year cumulative conditions.



1 Chatham Lane/ Chambers Avenu	2 Driveway 1/ Chambers Avenue	3 Antelope Road/ Chambers Avenu	4 Chatham Lane/ Tioga Lane	5 Driveway 2/ Tioga Lane	6 Antelope Road/ Tioga Lane	7 Chatham Lane/ McCall Blvd	8 Antelope Road/ McCall Blvd
← 8 / 2	← 8 / 2	9 / 5 ↲ 281 / 269 ↓ 22 / 43 ↳	1 / 2 ↓	1 / 2 ↳	2 / 0 ↲ 300 / 154 ↓	7 / 7 ↲ 3 / 3 ↳	193 / 142 ↲ 22 / 26 ↓ 37 / 33 ↳
1 / 2 →	1 / 2 →	↱ 31 / 41	← 3 / 0	↱ 1 / 2	1 / 2 ↴	↱ 51 / 3	↱ 49 / 53
1 / 3 ↴ 53 / 3 ↰		1 / 1 ↴ 1 / 2 ↴ ↰ 4 / 6 ↑ 210 / 295 ↱ 14 / 14	4 / 3 ↴ ↰ 1 / 16 ↑ 54 / 8	← 3 / 0	↰ 2 / 2 ↑ 235 / 166	← 1341 / 1008	← 1187 / 871
						6 / 14 ↴	↰ 53 / 47
						919 / 1462 →	179 / 304 ↴ ↰ ↑ ↱
							763 / 1131 → 50 / 21 27 / 13 61 / 47
							17 / 52 ↴

FIGURE 15

XXX / YYY AM / PM Peak Hour Volume (In PCEs)

Cypress Sands Townhomes
Opening Year Cumulative Without Project Peak Hour Traffic Volumes

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Table H: Opening Year Cumulative Levels of Service

Intersection	LOS Std.	Control	OY Cumulative Without Project				OY Cumulative With Project			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 . Chatham Lane/ Chambers Avenue	D	TWSC	8.77	A	8.56	A	8.86	A	8.52	A
2 . Driveway 1/ Chambers Avenue	D	TWSC		A		A	8.36	A	8.36	A
3 . Antelope Road/ Chambers Avenue	D	TWSC	11.71	B	11.62	B	11.88	B	11.83	B
4 . Chatham Lane/ Tioga Lane	D	TWSC	9.35	A	8.34	A	9.04	A	8.78	A
5 Driveway 2/ Tioga Lane	D	TWSC	8.54	A	8.53	A	8.58	A	8.62	A
6 Antelope Road/ Tioga Lane	D	TWSC	9.99	A	9.09	A	10.18	B	9.18	A
7 Chatham Lane/ McCall Blvd	D	TWSC	33.3	D	27.49	D	24.93	C	22.04	C
8 Antelope Road/ McCall Blvd	D	Signal	29.8	C	28.6	C	30.2	C	29.8	C

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.

LOS = Level of Service

HCM analysis for TWSC intersections is based on the highest average delay for the worst movement and the addition of right turns can reduce the average delay for the approach in case of shared lanes on the minor leg. At the intersection of Chatham Lane & McCall Boulevard, the project adds southbound right turn volumes, resulting in a lower average delay for the worst case movement. It should be noted that the City might impose turn restrictions at the intersection of Chatham Lane/McCall Boulevard in future. This is unlikely to change the LOS at study intersections.

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Table I: Opening Year Cumulative Roadway Segment Levels of Service

Roadway Segment	LOS Standard	Classification	Roadway Capacity	Without Project			With Project			V/C Delta
				Daily Volume	V/C	LOS	Daily Volume	LOS	V/C	
1 . Antelope Road between Chambers Avenue and McCall Boulevard	D	Major	25,575	15,630	0.611	A	16,154	A	0.632	0.020

Notes:

LOS = Level of Service, * = Exceeds Level of Service

Currently Antelope Road has 2 northbound Lanes and 1 southbound lane. The capacity had been calculated by applying a factor of 0.75 to the GP Roadway Capacity. Please note that traffic volumes are lower than the capacity of a 2 lane Collector for LOS C is (10,400).



1 Chatham Lane/ Chambers Avenu	2 Driveway 1/ Chambers Avenue	3 Antelope Road/ Chambers Avenu	4 Chatham Lane/ Tioga Lane	5 Driveway 2/ Tioga Lane	6 Antelope Road/ Tioga Lane	7 Chatham Lane/ McCall Blvd	8 Antelope Road/ McCall Blvd
← 10 / 4	← 8 / 2	11 / 9 · 281 / 269 · 22 / 43	6 / 5 · 1 / 2 · ↱ 2 / 2	9 / 6 · 15 / 11 · ↱ 6 / 15	2 / 0 · 312 / 162	19 / 15 · 3 / 3 · ↱ 51 / 3	205 / 150 · 27 / 29 · 46 / 39 · ↱ 52 / 62
↰ 5 / 3	↰ 6 / 15	↱ 31 / 41	← 3 / 0	← 3 / 0		← 1353 / 1016	← 1187 / 871
2 / 4 →	1 / 2 →	6 / 4 ↳	4 / 3 ↳	3 / 9 ↳	15 / 11 ↳	10 / 25 ↳	183 / 315 ↳
2 / 5 ↳	2 / 7 ↳	13 / 10 ↳	↰ 7 / 5		↰ 7 / 15	923 / 1473 →	763 / 1131 →
55 / 5 ↰	7 / 5 ↰	↰ 8 / 17	1 / 16 ↰		239 / 177 →		17 / 52 ↳
2 / 4 ↱	16 / 11 ↱	↑ 210 / 295	↑ 56 / 12				↰ 50 / 21
		↱ 14 / 14	↱ 2 / 7				↑ 29 / 17
							↱ 61 / 47

FIGURE 16

XXX / YYY AM / PM Peak Hour Volume (In PCEs)

Cypress Sands Townhomes
Opening Year Cumulative With Project Peak Hour Traffic Volumes

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APPENDIX A:
Approved Scoping Agreement

Sandipan Bhattacharjee

From: Christopher Heron <cheron@cityofmenifee.us>
Sent: Friday, January 31, 2025 12:56 PM
To: Sandipan Bhattacharjee; Ryan Fowler; Ryan Luckert
Subject: Re: [EXT] RE: Cypress Sands - Site Plan

Thank you no further comments.

Thank you,

Christopher Heron, EIT | Associate Engineer
Engineering Department
City of Menifee | 29844 Haun Road | Menifee, CA 92586
Direct: (951) 723-3723 | City Hall: (951) 672-6777
cheron@cityofmenifee.us |

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From: Sandipan Bhattacharjee <sandipan@translutions.com>
Sent: Friday, January 31, 2025 10:48 AM
To: Christopher Heron <cheron@cityofmenifee.us>; Ryan Fowler <rfowler@cityofmenifee.us>; Ryan Luckert <rluckert@rinconconsultants.com>
Subject: RE: [EXT] RE: Cypress Sands - Site Plan

[CAUTION]: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Chris,
So sorry I missed that. Please see attached.

Thanks,
Sandipan

ATTACHMENT A
SCOPING AGREEMENT FOR TRAFFIC STUDY

This letter acknowledges the City Menifee Engineering Department requirements for the traffic study of the following project. The analysis must follow the latest City Traffic Study Guidelines dated October 2020

Case No. PLN22-0198
Related Cases -
SP No.
EIR No.
GPA No.
CZ No.
Project Name: Cypress Sands Townhomes
Project Location: SEC of Chambers and Antelope
Project Description: 132 Single Family Attached Townhomes

	Consultant	Developer
Name:	Translutions, Inc.	
Address:	17632 Irvine Blvd, Ste 200 Tustin CA 92780	
Telephone:	949-656-3131	

A. Trip Generation Source: ITE *Trip Generation Manual,* most recent edition

Existing Land Use	Vacant	Proposed Land Use	Townhomes
Existing Zoning	MDR	Proposed Zoning	MDR
Total Daily Trips	950		

	In	Out	Total
AM Trips	16	47	63
PM Trips	44	31	75

Internal Trip Allowance ☐ Yes ☒ No (% Trip Discount)

Pass-By Trip Allowance ☐ Yes ■ No (% Trip Discount)

(Attach additional sheet if this is a multi-use site with a breakdown of trips generated)

B. Trip Geographic Distribution: N 10 % S 10 % E 20 % W 60 %
(See attached exhibit for detailed assignment)

C. Background Traffic

Project Completion Year: 2026 Annual Ambient Growth Rate: 2 %
Other area projects to be included:

Please contact the Engineering Department or use the most recently provided data

Model/Forecast methodology if required N/A

D. Horizon Year Analysis: Does this project require a Horizon Year Analysis? ☐ Yes ■ No

E. Study intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

1. Chatham Lane/ Chambers Avenue
2. Driveway 1/ Chambers Avenue
3. Antelope Road/ Chambers Avenue
4. Chatham Lane/ Tioga Lane
5. Driveway 2/ Tioga Lane
6. Antelope Road/ Tioga Lane
7. Chatham Lane/ McCall Blvd
8. Antelope Road/ McCall Blvd

F. Study Roadway Segments:

1. Antelope Road between Tioga & McCall
2.
3.
4.
5.
6.
7.
8.

G. Other Jurisdictional Impacts

Is this project within any other Agency's Sphere of Influence or one-mile radius of boundaries? ☐ Yes ☒ No

If so, name of Jurisdiction:

-

H. Site Plan (please attach a legible 11'X17' copy)

I. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Engineering Department)

Recommended by:

Consultant's Representative — Date

Deepali Chausalkar

Scoping Agreement Submitted on — Date

4/3/2023

Scoping Agreement Resubmitted on — Date

1/24/25

Approved Scoping Agreement:

City of Menifee — Date

translutions, inc.
17632 Irvine Boulevard, Suite 200,
Tustin, California 92780
Phone (949)656-3131 Fax (949)445-3131
solutions@translutions.com

January 31, 2025

Mr. Christopher Heron, EIT, Associate Engineer
Engineering Department
City of Menifee
29844 Haun Road,
Menifee, California 92586

Subject: Scoping Letter for Traffic Impact Analysis – Cypress Sands Apartments

Dear Mr. Heron:

Translutions, Inc. (Translutions) is under contract to prepare a Traffic Impact Analysis (TIA) for a proposed residential development project to be located at the southwest corner of Antelope Road and Chambers Avenue in the City of Menifee. The proposed development will include 132 row townhomes (single-family attached residential units) and is anticipated to be completed in 2026. Attached Figure 1 (all figures and tables attached) illustrates the site plan for the proposed project.

Based on discussion with the City, the trip generation for the proposed project was developed using rates for Land Use 215 "Single Family Attached Housing" from the Institute of Transportation Engineers' (ITE) *Trip Generation*, 11th Edition. The ITE defines Single Family Attached Housing as - *Single-family attached housing includes any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space*. Table A shows the calculation of the project trip generation for the a.m. peak hour, p.m. peak hour, and weekday. As shown in Table A, the project is forecast to generate 63 trips in the a.m. peak hour, 75 trips in the p.m. peak hour, and 950 daily trips.

Project trip distribution patterns for the proposed project were estimated based on the location of the project in relation to the surrounding land uses and the regional network. Figures 2 and 3 illustrate the project trip distribution and the resulting project trips at the proposed study intersections. The project is anticipated to add less than 50 peak hour trips to any intersection and less than 500 daily trips to any General Plan roadway segment. Based on these distribution patterns and recommendations from the City, an operational analysis of the following intersections are proposed:

1. Chatham Lane/ Chambers Avenue
2. Driveway 1/ Chambers Avenue
3. Antelope Road/ Chambers Avenue
4. Chatham Lane/ Tioga Lane
5. Driveway 2/ Tioga Lane
6. Antelope Road/ Tioga Lane
7. Chatham Lane/ McCall Blvd
8. Antelope Road/ McCall Blvd

In addition, the City's guidelines requires analysis of roadway segments with more than 500 daily trips. The segment of Antelope Road between the future extension of Tioga Lane and McCall Boulevard is anticipated to have more than 500 daily project trips and will be included in the analysis.

Translutions proposes to analyze the a.m. and p.m. peak hour traffic operations at the above intersections under the following scenarios:

- Existing Conditions;
- Existing Plus Project Conditions;
- Opening Year (2026) without Project Conditions;
- Opening Year (2026) with Project Conditions;
- Opening Year (2026) Cumulative without Project Conditions; and
- Opening Year (2026) Cumulative with Project Conditions.

Translutions will collect existing intersection turn volumes for the a.m. and p.m. peak periods for the intersections for the existing intersections. Please note that the previous set of counts from 2022 will also require recounting since there have been some development as well as network changes in the area.

Opening year (2026) peak hour traffic volumes will be developed by applying an annual growth rate of 2 percent per year (2025 to 2026) to the existing volumes and adding cumulative project trips at each study intersection. The cumulative projects will be determined from the City of Menifee development activity and on consultation with City Staff. Further, Tioga Lane will be extended by the project and volumes on Tioga Lane will change volumes on Chambers Avenue and on Chatham Lane. To calculate future volumes on the Tioga Lane Extension and the change to traffic on Chatham Lane, traffic counts will be conducted at the intersections on Tioga Lane/Chatham Avenue and Chatham Lane/McCall Boulevard and traffic will be rerouted manually.

Traffic volumes obtained above will be used to calculate levels of service at the study intersections, Level of service calculations will be conducted using Synchro software, which follows HCM methodologies. Translutions would also like to request an updated list of cumulative projects in the vicinity of this project from the City to develop opening year traffic volumes. In addition, Translutions would also like to request information on the City's Capital Improvement Program and any other transportation improvements that the City is considering.

VMT Analysis

The project VMT was calculated using the WRCOG VMT Calculator. The project VMT is less than the threshold and no further analysis is required. Attachment A shows the output from the calculator.

I would appreciate it if you could review the scope of the analysis outlined in this letter and the accompanying figures. Please let me know whether the City has any comments on the trip generation, trip distribution, or the proposed study area, as well as any specific issues that it wants the traffic study to address. Finally, if the City is aware of any other approved or pending projects in the vicinity of this project, I would appreciate receiving information on those projects so that we may include trips generated by those projects in the study.

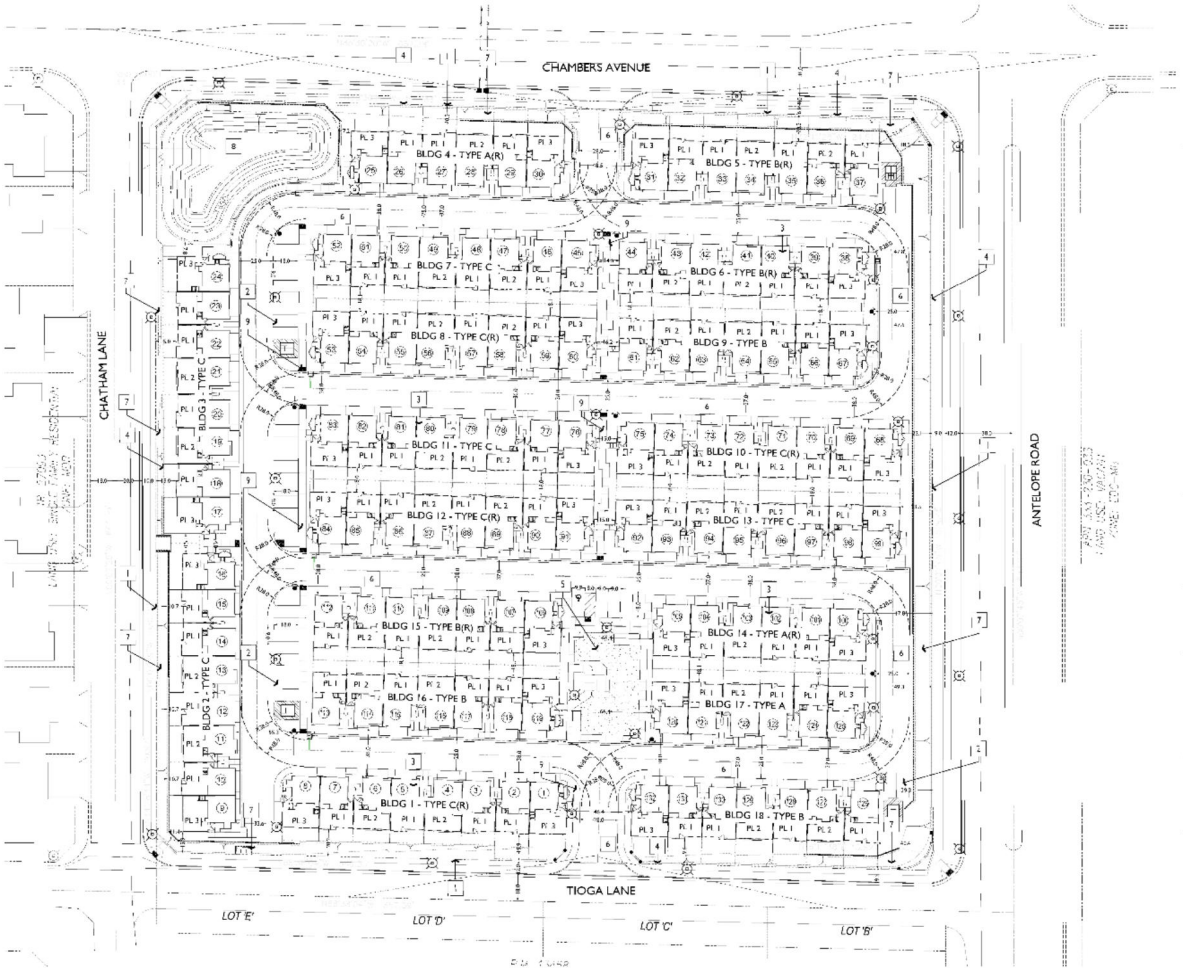
Thank you for your assistance in this matter. I can be reached at (949) 232-8707 or by email at deepali@translutions.com.

Sincerely,

translutions, Inc.

Deepali Chausalkar
Principal

Attachments: Table A – Project Trip Generation
Figure 1 – Site Plan
Figure 2 – Project Trip Distribution
Figure 3 – Project Trip Assignment



PROJECT SUMMARY

PROPOSED MEDIUM DENSITY RESIDENTIAL PROJECT CONSISTING OF 18 TWO STORY ROW TOWNHOME BUILDINGS (132 UNITS) WITH ASSOCIATED AMENITY AREAS AND PARKING

EXISTING USE	VACANT
ZONE	MEDIUM DENSITY RESIDENTIAL (MDR)
A.P.N.	333-050-034
# OF UNITS	132
# OF BLDG'S	18
GROSS SITE	7.95 GROSS ACRES
NET SITE	7.34 ACRES
DENSITY	18.0 DU/ACRE
BLDG CODE	CALIFORNIA RESIDENTIAL CODE
CONST. TYPE	VB
OCCUPANCY	R3/U
FIRE SPRINKLERS	13D (PER CRC R313)
BLDG HEIGHT	30' @ RIDGE, 21' @ EAVE (2 STORY)
MAXIMUM BUILDING AREA = 14,970 S.F. (B PLEX)	
FIRE FLOW = 1,625 GPM @ 20 PSI RESIDUAL FOR 2 HRS	
OFM-01B ITEM 2B, CFC TABLE B105.1(1) AND B105.1(2)	
HYDRANT SPACING PER OFM-01B ATTACHMENT 4	

PRODUCT SUMMARY

69 - PL 1	1,312 SF	3 BD + LOFT
33 - PL 2	1,423 SF	3 BD + LOFT
30 - PL 3	1,510 SF	4 BD

REQUIRED PARKING

DENSITY BONUS	
102 U @ 3 BD = 1.5 ST/U	153 STALLS
30 U @ 4 BD = 2.5 ST/U	75 STALLS
TOTAL REQ'D	228 STALLS

PROVIDED PARKING

GARAGE STALLS	264 STALLS
OPEN STALLS	31 STALLS
	295 TOTAL

BICYCLE PARKING 15 REQUIRED

OPEN SPACE SUMMARY

PRIVATE YARDS	34,946 SF (264 SF/UNIT)
COMMON AREA	6,256 SF (47 SF/UNIT)
PASSIVE OPEN	4,002 SF
SLOPE AREA	14,473 SF
WATER QUALITY	10,839 SF
OTHER OPEN	51,791 SF

NET SITE AREA	319,824 SF
DRIVES/PARKING	73,113 SF (22.9%)
BLDG. COVERAGE (50% ALLOWED)	124,404 SF (38.9%)
OPEN SPACE (30% REQ'D)	122,307 SF (38.2%)

UTILITY/SERVICES PROVIDERS

WATER SERVICE:	EASTERN MUNICIPAL WATER DISTRICT
SEWER SERVICE:	EASTERN MUNICIPAL WATER DISTRICT
GAS:	SOUTHERN CALIFORNIA GAS COMPANY
ELECTRICITY:	SOUTHERN CALIFORNIA EDISON
TEL./ CABLE:	AT&T/ FRONTIER COMMUNICATIONS
SCHOOL DISTRICT:	MENIFEE UNION
DEDICATIONS	9' AT ANTELOPE ROAD 6' AT CHAMBERS AVENUE 30' AT TIOGA LANE

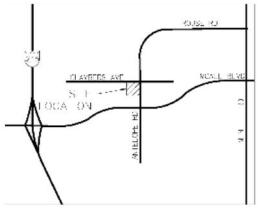
SITE PLAN KEYNOTES

1	PROPOSED RIGHT OF WAY
2	STANDARD PARKING STALL - 9' X 18'
3	2-STORY TOWNHOME BUILDING
4	PERIMETER WALL
5	AMENITY AREA
6	FIRE LANE
7	LANDSCAPED SLOPE
8	WATER QUALITY BASIN
9	WALKWAY

SITE PLAN LEGEND

(#) UNIT NUMBER

PL 3 UNIT PLAN TYPE



NORTH

MENIFEE

CYPRESS SANDS TOWNHOMES

CONCEPTUAL SITE PLAN

FIGURE 1

Cypress Sands Townhomes
Site Plan

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Q:\Rincon - Cypress Sands Apartments\Scope v3\Z40 Site Plan (1/24/2025)

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Table A - Project Trip Generation

Land Use	Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
Apartments								
Trip Generation Rates [1]		0.12	0.36	0.48	0.34	0.23	0.57	7.2
Trip Generation	132 DU	16	47	63	44	31	75	950
Total Trip Generation		16	47	63	44	31	75	950

Notes: DU = Dwelling Unit

[1] Trip generation based on rates for Land Use 215 - "Single Family Attached Housing" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

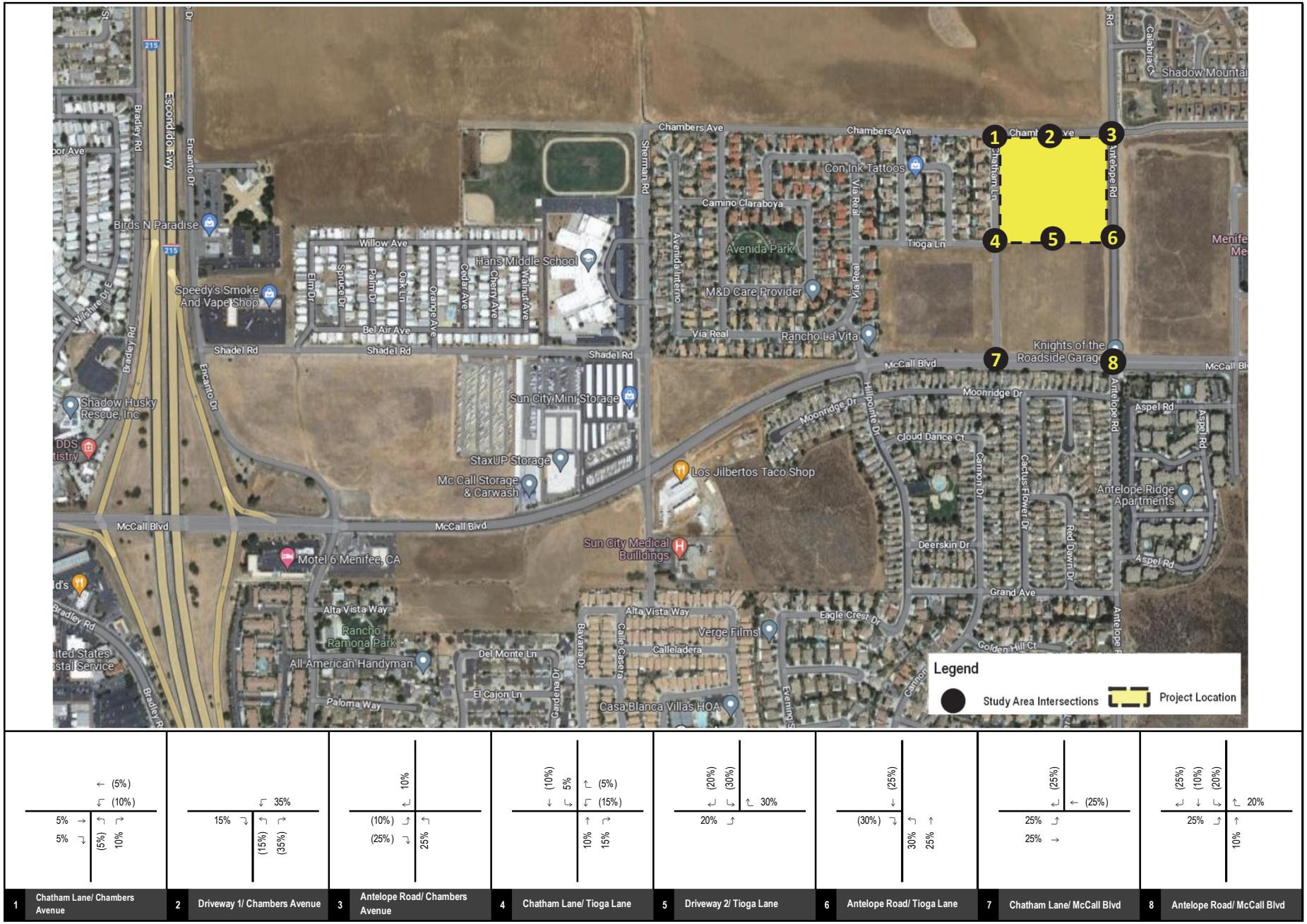


FIGURE 2

XXX%(YYY%) Inbound%(Outbound%) Percent

Cypress Sands Townhomes
Project Trip Distribution

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Q:\Rincon - Cypress Sands Apartments\Scope v3\Z40 Dist (1/24/2025)

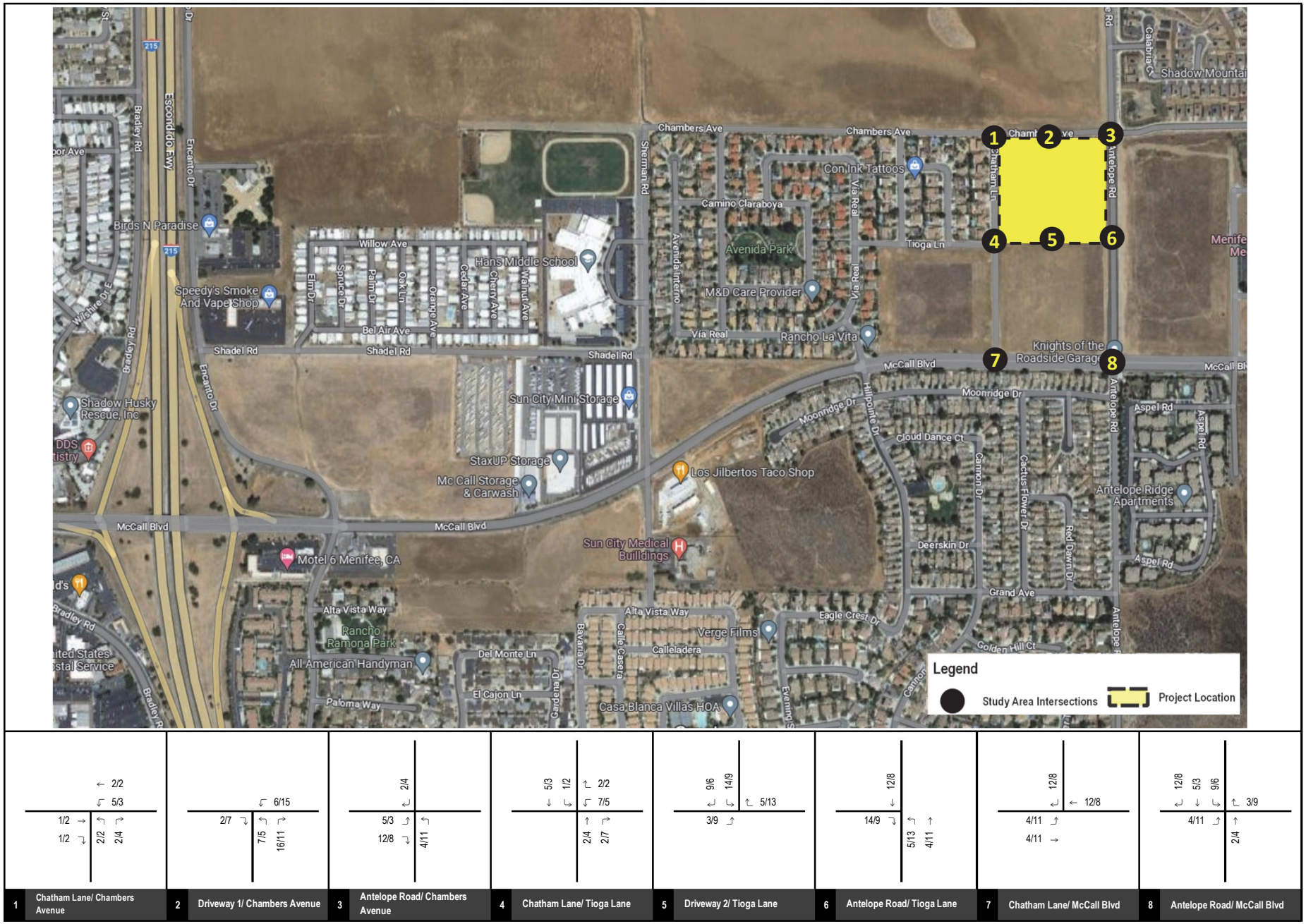


FIGURE 3

XX/YY AM/PM Trips

Cypress Sands Apartments
Project Trip Assignment

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Q:\Rincon - Cypress Sands Apartments\Scope v3\Z40 Assign (1/24/2025)

Western Riverside Council of Governments VMT Tool

Project Information

Project Name

Cypress Sands

Parcel Number (RIVCOM TAZ#1073)	Analysis Year
333050034	2022

Screening Criteria for Menifee

Use the online WRCOG VMT Tool to determine the following

Is the Project screened by Transit Priority Area or located in a low VMT generating zone? — Yes

Is the Project one of these land use types? — No

(●) (show land use types)

Does the project generate fewer than 110 daily trips? — No

(enter project land use in the section below)

The Project can be considered for screening from additional analysis.
Please refer to the 'secondary screening checks' table in the User Guide.

Project Land Use Information

		Unit
Residential : Single Family Homes	133	Dwelling Units
Residential : MultiFamily Homes	0	Dwelling Units
Office	0	1,000 Square Feet
Retail	0	1,000 Square Feet
Industrial	0	1,000 Square Feet
Manufacturing	0	1,000 Square Feet
Warehousing	0	1,000 Square Feet
Hotel	0	Rooms
University	0	Students
Private School	0	Students

Project Trips, VMT, and TAZ SED Information

Project Summary

Select VMT Methodology: Origin Destination (OD)

Analysis Year Daily Trips: 1107 Average Trip Length: 10.6
Service Population: 399
Project VMT per Service Population: 29.3

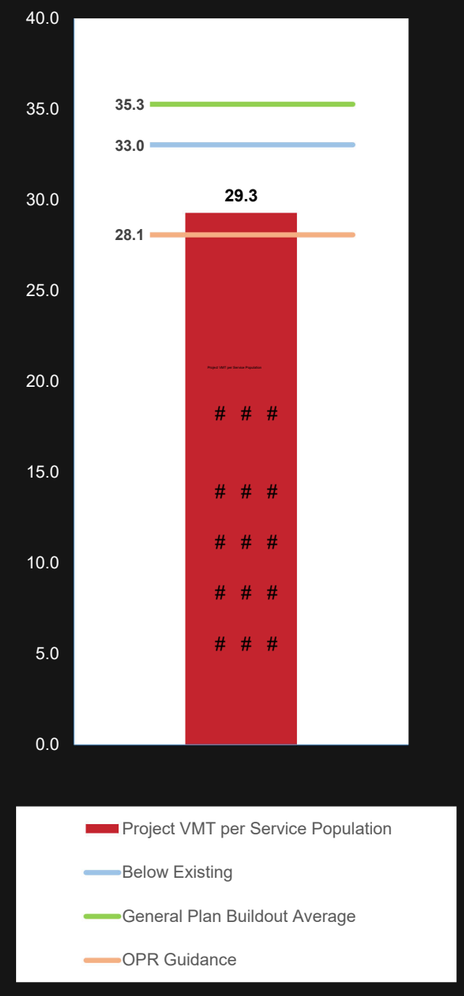
Project Location TAZ Socioeconomic Data — 2018 RIVCOM Model

Land Use			Value	Unit
SFDU	-	Single-Family Detached Housing	110	DU
MFDU	-	Multi-Family Attached Housing	106	DU
K12	-	Kindergarten - 12th Grade Enrollment	0	STU
COLLEGE	-	College Enrollment	0	STU
AG	-	Agricultural & Mining Employment	0	EMP
CONST	-	Construction Employment	0	EMP
MANU	-	Manufacturing Employment	5	EMP
WHOLE	-	Wholesale Employment	0	EMP
RET	-	Retail Employment	0	EMP
TRANS	-	Transportation, Warehousing, and Utility Employment	0	EMP
INFOR	-	Information Services Employment	0	EMP
FIRE	-	Financial Activities Employment	0	EMP
PROF	-	Professional and Business Services Employment	3	EMP
EDUC	-	Educational and Health Services Employment	0	EMP
ARTENT	-	Arts/Entertainment Employment	0	EMP
OTHSER	-	Other Services Employment	0	EMP
PUBADMN	-	Public Administration Employment	0	EMP

Project VMT Thresholds Comparison

Select the VMT Thresholds for comparison to project VMT

- [X] Below Existing
- [X] Better than General Plan Buildout
- [X] OPR Guidance (15% Below Existing)



ver. 2021.11.24

APPENDIX B:
List of Cumulative Projects

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Appendix B - List of Cumulative Projects					
No.	**Map ID**	**Project Number**	**Project Title**	**Project Description**	**Absorption Rate**
Residential Projects					
1	10	TTM 36657/PM 36658	Cimarron Ridge (Van Daele)	240.3 acres - 756 residential lots - 5,000 - 10,000 sq ft lot sizes and 10.9 ac Park	25%
2	182	DEV2022-001, PLN22-002	TTM 38128	96 single family lots, 7,200 sq. ft. minimum, on 28 acres	100%
3	96	TR 2015-211 (TR 36911)	Valley Blvd. Tract Map	21.95 acres - 68 residential lots, 7,200 sq ft min.	100%
4	58	2018-225 PP	Vista Ridge	2.73 acres - 30 apartment units	100%
5	205	DEV2022-023	Coronado Condos	A 73 unit dettached condominium community on 6.5 net acres	100%
6	209	DEV2023-002	TR/PP Di Capri	A 61 unit condo map	100%
7	90	TM 2015-250	McLaughlin Village	14.34 acres - 126 condominium units	50%
8	54	2017-189	Legado	332 acres - 1,022 residential lots on 216.9 acres - 20.1 acres of commerical land uses - 12.9 acres community park/community center - 1.9 acres of private recreation center - 7.9 acres of parks - 6.3 of conserved open space - 26.4 acres of detention qual*	25%
9	12	TTM 29835	Underwood (KB Homes)	236 acres - 543 residential lots - 5,000 sq ft min. lot size	25%
10	177	DEV2021-005	Countryside TTM 38132	169 unit tract, lot sizes ranging from 4,250 to 11,801 sqft.	50%
11	177B	DEV2021-005	Harvest Glenn TTM 38133	145 unit tract, lot sizes ranging from 4,250 to 11,801 sqft.	50%
12	9	TTM 37537, SP PLN21-0217, SPA PLN21-0221, GPA PLN21-0336, CZ PLN21-0335	Menifee Valley SP (Brookfield)	590 acres - Mixed Use, 1,718 residential units	25%
13	183	DEV2022-002, PLN22-003 TTM 38346, PLN22-004	LDW TTM 38346	9.5 gross acres, 162 condominiums	50%
14	186	DEV2022-006, PLN22-0030	The Village at Junipero	17.87 gross acres, 240 luxury apartments	50%
15	18	TTM 31456	Enclave	161.34 acres - 177 Single Family residential lots - 7,200 sq ft min.	50%
16	180	PLN21-0375, 0376, 0377	Villago Villas	GPA/ZCA/PP Add 2 Buildings, 24 residential units	100%
17	20	PP 19469	Kensington Apartments	20 acres - 26 Buildings - 221 Units	50%
18	212	PLN23-0063	Menifee Coastline TTM38525	A 45 single family unit tract at the north west corner of Coastline and Menifee Road.	100%
19	213	DEV2022-029	Salt Creek TTM 38625	325 single family homes, 8.36 acres of park and open space	25%
20	148	SP 2019-017	Menifee Village SPA	Amend SP158 PA 3-1, 3-2, 4-3 and 4-4 increase residential planning areas	50%
21	34	DEV 2019-007 (TR37671)	Diamond Bros.	69.32 acres - 197 residential lots - 6,000 sq ft min	50%
22	147	TR PLN20-0055 (TR37828)	Menifee Village TTM	18.17 acres, 91 residential lots, 2,720 sq ft - 4,819 sq ft	100%
23	170	TR PLN21-0238, PP PLN21-0239	Riverwalk	14 acres, 199 residential units, 1,600-1,800 sqft units	50%

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Appendix B - List of Cumulative Projects					
No.	**Map ID**	**Project Number**	**Project Title**	**Project Description**	**Absorption Rate**
Commercial Projects					
24	175	PP PLN21-0319, CUP PLN21-0320	Goetz & Ethanac Commercial	3.81 acres, 4 buildings - C-Store-7,250 sq ft, Car wash 2,790 sq ft, Retail 7,040 sq ft and Fuel Canopy	100%
25	169	PP/CUP 2017-060	Ethanac Square	Large truck diesel fuel station 4 pumps , 3,800 sq ft gas station/C-store, 2,080 sq ft express car was	100%
26	121	2016-290 CUP, PM 2016-291	On-Deck	108 Hotel Rooms, sit down resturant, fast food resturant with drive through and a gas station/convenience store/car wash	100%
27	221	PLN23-0215	Menifee West Coast Self-Storage Facility	Menifee West Coast Self-Storage proposes seven single-story buildings totaling 71,637 square feet of building area on 4.06 acres	100%
28	146	PP 2018-300, TPM 2018-320	Motte Country Plaza	3.8 acres - Redevelopment of the Motte Country Plaza - Relocation of the train car restaurant; new 4,700 sq. ft. 6-dual pump gas station; new 3,838 sf Concenience store with drive-thru restaurant; new 1,050 sf car wash	100%
29	227	PP PLN23-0098, TPM PLN23-0099, SPA PLN23-0100	HWY 74 and Menifee Road Commercial and Industrial Center (Howard)	104-acres, 6 Commercial buildings (approx 81K SF), 10 Industrial buildings (approx 1.5M SF)	100%
30	106	PP 2017-225	Harvest Glen Marketplace	5.04 acres - 18,501 sq. ft. commercial buildings (gas station with canopy, convenience store, two (2) drive thru restaurants and a car wash with vacuums)	100%
31	223	PLN24-0047 and PLN24-0048	Omega Paving	Asphalt contractor storage yard and repair facility	100%
32	229	PLN24-0103	Kaiser Permanente Medical Office	Kaiser Permanente is proposing a 50,800 sf net (54,500 sf gross) medical office building at the northeast corner of Encanto Drive and Rouse Rd. The site is currently vacant. The proposed mob will be 3 floors and approximately 54 ft tall including the mech	100%
33	231	PLN24-0001	The View Church	Church Expansion. Adding 6,949 Sq.Ft. to existing sanctuary building. Adding 5,689 Sq.Ft. to existing fellowship hall.	100%
34	215	PP PLN23-0126, CUP PLN23-0127, VAR PLN23-0214	Burger King	2,158 Sq.Ft. Drive-Thru Quick Serve Restaurant Including 17 parking Stalls on 0.57 Acres, S variance was requested to allow for the 12'-4" landscape allowance within the ROW.	100%
35	157	PP PLN20-0003	McCall-Encanto Gas Station	2.10 acres - 11,340 sf retail development of gas station, car wash, fast food, convenience store	100%
36	14	CUP 3549 / 2017-089	McCall Square (Rancon)	18.1 acres - 7 self-storage buildings (totaling 150,541 sq ft) - 6 commercial buildings (totaling 84,200 sq ft)	100%
37	204	PLN22-0194	New Wireless Communication Facility	A new proposed 60 foot mono Eucalyptus wireless cell site	100%
38	187	PLN21-0372, MJMOD	Menifee Self Storage	The proposed expansion of an existing self storage facility by 45,075 sq. ft.	100%
39	226	PLN24-0003, PLN24-0004	Medical Office Building	PLN24-0003 proposes a 9,103 square foot two story medical office building.	100%
40	203	PLN22-0212	Hampton Inn	Proposes a 4-story, 71-room hotel	100%

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Appendix B - List of Cumulative Projects					
No.	**Map ID**	**Project Number**	**Project Title**	**Project Description**	**Absorption Rate**
Industrial Projects					
41	191	DEV2022-012	COMPASS - Project Site 2 Wheat Warehouse	Warehouse distribution center - 87,770 sq. ft.	100%
42	1	Plot Plan PLN21-0370, Tentative Parcel Map PLN22-0041	CADO Menifee Industrial Warehouse	40.03 gross acres, 700,037 sq ft warehouse building	100%
43	189	DEV2022-010, PLN22-0058, PLN22-0060	COMPASS - Project Site 1 Corsica Business Park	The proposed development of 2 warehouse buildings on 13.66 acres totaling 154,831 square feet	100%
44	196	DEV2022-017, PLN22-0179	Ares Warehouse on Murrieta	Proposes to construct one (1) concrete tilt-up building totaling 517,720 sq. ft. which includes 20,320 sq. ft. of office, and 497,400 square feet of warehouse	100%
45	173	PP PLN21-0281, TM PLN21-0282	Northern Gateway Commerce Center	One industrial warehouse building totaling 1,286,607 square feet on 63.3 acres	100%
46	197	DEV2022-018	COMPASS - Project Site 3 Ethanac and Evans Warehouse	Proposes the development of a 138,546 square foot warehouse. The proposed warehouse consists of 131,896 square feet of warehouse space and 6,000 square feet of office space	100%
47	174	PP PLN21-0290	Ethanac & Barnett Warehouse	13.89 acres, 2 buildings, 125,000 sq ft/bldg	100%
48	210	PLN23-0040	Northern Gateway Logistics Center	Proposes two warehouses; 109,757 sq. ft. and 302,072 sq. ft.	100%
49	188	DEV2022-009, PLN22-0045	United Carports Warehouse	The proposed development of an approximatley 58,643 sq. f.t warehouse	100%
50	184	DEV2022-003, PLN22-015	Mapes and Sherman Warehouse	13.35 gross acres, 277,578 square foot warehouse	100%
51	198	DEV2022-019	Trumble and Watson Warehouse	DEV2022-019 (327,631 square foot speculative warehouse building (inclusive of 15,000 square feet of office space) on a 17.62 acre site	100%
52	217	PLN23-0171	Ethanac Business Park	Proposal to construct a 264,710 square foot industrial warehouse on 11.47 acres. Project includes a GPA, SPA & CZ to change one of the parcels from Heavy Industrial to Specific Plan.	100%
53	151	PP 2019-005	Menifee Commerce Center	Two warehouse buildings - (1) 1,254,160 SF & (2) 385,970 SF, both sites comprise approximately 72 acres	100%
54	193	DEV2022-014	Motte Business Center	One warehouse building totaling 1,138,638 sq. ft. which includes 10,000 sq. ft. of office, 928,638 sq. ft. of warehouse and 200,000 sq. ft. of mezzanine warehouse on an approximately 44 acre project site	100%
55	194	Plot Plan PLN 22-0154 and Conditional Use Permit PLN 22-0155	Nova Power Bank Project	Proposes the re-development of the Inland Empire Energy Center (IEEC) generation plant, which has been decommissioned. The Project includes a 680 MW battery energy storage system	100%
56	201	Plot Plan PLN 22-0282, Conditional Use Permit PLN 22-0281, & Tentative Parcel Map PLN 22-0283	Double Butte BESS	Proposes the development of a 500 MW utility scale battery energy storage system	100%
57	195	DEV2022-016	McLaughlin San Jacinto Warehouses	The proposed development of five industrial warehouse building totaling 491,467 square feet.	100%
58	227	PP PLN23-0098, TPM PLN23-0099, SPA PLN23-0100	HWY 74 and Menifee Road Commercial and Industrial Center (Howard)	104-acres, 6 Commercial buildings (approx 81K SF), 10 Industrial buildings (approx 1.5M SF)	100%

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Appendix B - List of Cumulative Projects					
No.	**Map ID**	**Project Number**	**Project Title**	**Project Description**	**Absorption Rate**
Mixed Use Projects					
58	202	Plot Plan PLN 23-0028 & Tentative Parcel Map PLN 23-0030	Beyond Menifee	Proposes a mixed use development on 17.3 acres including retail, office, & 240 dwelling units.	100%
59	147	TR PLN20-0055 (TR37828)	Menifee Village TTM	18.17 acres, 91 residential lots, 2,720 sq ft - 4,819 sq ft	100%

APPENDIX C:
Cumulative Projects Trip Generation

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Appendix C: Cumulative Projects Trip Generation

Cumul Project No.	Map Id	Project Title	Land Use	Units	Peak Hours						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
Residential Projects											
1	10	Cimarron Ridge (Van Daele)	Single Family Detached Housing	189 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					34	98	132	112	66	178	1,782
2	182	TTM 38128	Single Family Detached Housing	96 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					17	50	67	57	33	90	905
3	96	Valley Blvd. Tract Map	Single Family Detached Housing	68 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					12	36	48	40	24	64	641
4	58	Vista Ridge	Multi Family Low Rise	30 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					3	9	12	10	5	15	202
5	205	Coronado Condos Detached Condominium	Single Family Detached Housing	73 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					13	38	51	43	26	69	688
6	209	TR/PP Di Capri	Single Family Detached Housing	61 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					11	32	43	36	21	57	575
8	54	Legado	SFR, Shopping Center, Sports Park. Recreational Community Center		Trip Generation directly from Legado Specific Plan TIA						
					94	175	269	215	161	375	3,839
9	12	Underwood (KB Homes)	Single Family Detached Housing	136 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					25	70	95	80	48	128	1,280
10	177	Countryside TTM 38132	Multi Family Low Rise	85 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					8	26	34	27	16	43	570
11	177B	Harvest Glenn TTM 38133	Multi Family Low Rise	73 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					7	22	29	23	14	37	489
12	9	Menifee Valley SP (Brookfield)	Single Family Detached Housing	332 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					60	172	232	197	115	312	3,131
			Multi Family Low Rise	98 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					9	30	39	31	19	50	657
13	183	LDW TTM 38346	Multi Family Low Rise	81 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					8	24	32	26	15	41	546
14	186	The Village at Junipero	Multi Family Low Rise	120 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					12	36	48	39	22	61	809
15	18	Enclave	Single Family Detached Housing	89 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					16	46	62	52	31	83	835
16	180	Villago Villas	Multi Family Low Rise	24 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					2	8	10	8	4	12	162
17	20	Kensington Apartments	Multi Family Low Rise	111 DU							
			Trip Generation Rates[2]		0.10	0.30	0.40	0.32	0.19	0.51	6.74
					11	33	44	36	20	56	745
18	212	Menifee Coastline TTM38525	Single Family Detached Housing	45 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					8	24	32	27	15	42	424

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Appendix C: Cumulative Projects Trip Generation

Cumul Project No.	Map Id	Project Title	Land Use	Units	Peak Hours						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
19	213	Salt Creek TTM 38625	Single Family Detached Housing	81 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					15	42	57	48	28	76	766
20	148	Menifee Village SPA	Single Family Detached Housing	91 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					17	47	64	54	32	86	858
21	34	Diamond Bros.	Single Family Detached Housing	91 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					17	47	64	54	32	86	858
22	147	Menifee Village TTM	Single Family Detached Housing	91 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					17	47	64	54	32	86	858
23	170	Riverwalk	Single Family Detached Housing	100 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					18	52	70	59	35	94	938
Commercial Projects											
24	175	Goetz & Ethanac Commercial	Convenience Store/Gas Station	7.250 TSF							
			Trip Generation Rates[3]		28.26	28.26	56.52	27.26	27.26	54.52	700.43
			Trip Generation		205	205	410	198	197	395	5,078
			Pass By	-76% AM	-156	-156	-312	-149	-148	-296	-3,834
			Net New	-75% PM	49	49	98	49	49	99	1,244
			Fast-Food Restaurant without Drive-Through Window	7.040 TSF							
			Trip Generation Rates[4]		25.04	18.14	43.18	16.61	16.61	33.21	450.49
			Trip Generation		176	128	304	117	117	234	3,171
			Automated Car Wash	2.890 TSF							
			Trip Generation Rates[5]		7.10	7.10	14.20	7.10	7.10	14.20	142.00
			Trip Generation		21	20	41	21	20	41	410
			Gasoline/Service Station	16 Pumps							
			Trip Generation Rates[6]		5.14	5.14	10.28	6.96	6.96	13.91	172.01
			Trip Generation		82	82	164	111	112	223	2,752
			Pass By	-63% AM	-52	-52	-103	-63	-64	-127	-1,651
			Net New	-57% PM	30	30	61	48	48	96	1,101
			Total Net New Trips		276	227	504	235	234	470	5,926
25	169	Ethanac Square	Truck Stop	4 Pumps							
			Trip Generation Rates[7]		6.85	7.12	13.97	8.17	7.25	15.42	224.00
			Trip Generation		27	29	56	33	29	62	896
			Convenience Store/Gas Station	3.800 TSF							
			Trip Generation Rates[3]		28.26	28.26	56.52	27.26	27.26	54.52	700.43
			Trip Generation		107	108	215	104	103	207	2,662
			Pass By	-76% AM	-81	-82	-163	-78	-77	-155	-2,010
			Net New	-75% PM	26	26	52	26	26	52	652
			Automated Car Wash	2.080 TSF							
			Trip Generation Rates[5]		7.10	7.10	14.20	7.10	7.10	14.20	142.00
			Trip Generation		15	15	30	15	15	30	295
			Total Net New Trips		68	70	138	74	70	144	1,843
26	121	On-Deck	All Suites Hotel	108 Rooms							
			Trip Generation Rates[8]		0.18	0.16	0.34	0.18	0.18	0.36	4.4
					19	18	37	19	20	39	475
			High-Turnover(Sit-Down) Restaurant	5.500 TSF							
			Trip Generation Rates[9]		5.26	4.307	9.570	5.52	3.530	9.050	107.2
					29	24	53	30	20	50	590
			Pass By	-43%	-12	-10	-23	-13	-9	-22	-254
			Net New		17	14	30	17	11	28	336

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Appendix C: Cumulative Projects Trip Generation

Cumul Project No.	Map Id	Project Title	Land Use	Units	Peak Hours						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
26	121	On-Deck	Fast-Food Restaurant with Drive-Through Window	3.000 TSF							
			Trip Generation Rates[10]		22.75	21.86	44.61	17.18	15.85	33.03	467.48
			Trip Generation		68	66	134	52	47	99	1,402
			Pass By	-50%	-34	-33	-67	-26	-24	-50	-701
			Net New		34	33	67	26	23	49	701
			Gasoline/Service Station	6.000 VFP							
			Trip Generation Rates[6]		5.14	5.14	10.28	6.96	6.96	13.91	172.01
			Trip Generation		31	31	62	42	41	83	1,032
			Pass By	-63% AM	-20	-20	-39	-24	-23	-47	-619
			Net New	-57% PM	11	11	23	18	18	36	413
			Total Net New Trips		81	76	157	80	72	152	1,925
27	221	Menifee West Coast Self-Storage Facility	Mini Warehouse	71.637 TSF							
			Trip Generation Rates[11]		0.05	0.04	0.09	0.07	0.08	0.15	1.45
			Trip Generation		4	2	6	5	6	11	104
28	146	Motte Country Plaza	Gasoline/Service Station	12.000 VFP							
			Trip Generation Rates[6]		5.14	5.14	10.28	6.96	6.96	13.91	172.01
			Trip Generation		62	61	123	83	84	167	2,064
			Pass By	-63% AM	-39	-38	-77	-47	-48	-95	-1,238
			Net New	-57% PM	23	23	46	36	36	72	826
			Convenience Store/Gas Station	3.838 TSF							
			Trip Generation Rates[3]		28.26	28.26	56.52	27.26	27.26	54.52	700.43
			Trip Generation		108	109	217	105	104	209	2,688
			Pass By	-76% AM	-82	-83	-165	-79	-78	-157	-2,029
			Net New	-75% PM	26	26	52	26	26	52	659
			Automated Car Wash	1.050 TSF							
			Trip Generation Rates[5]		7.10	7.10	14.20	7.10	7.10	14.20	142.00
			Trip Generation		7	8	15	7	8	15	149
			Total Net New Trips		56	57	113	69	70	139	1,634
29	227	HWY 74 and Menifee Road Commercial and Industrial Center (Howard)	General Light Industrial	1500.000 TSF							
			Trip Generation Rates[12]		0.65	0.09	0.74	0.09	0.56	0.65	4.87
			Trip Generation		977	133	1,110	137	838	975	7,305
30	106	Harvest Glen Marketplace	Gasoline/Service Station	8 VHP							
			Trip Generation Rates[6]		5.14	5.14	10.28	6.96	6.96	13.91	172.01
			Trip Generation		41	41	82	56	55	111	1,376
			Pass By	-63% AM	-26	-26	-52	-32	-31	-63	-826
			Net New	-57% PM	15	15	30	24	24	48	550
			Fast-Food Restaurant without Drive-Through Window	1.102 TSF							
			Trip Generation Rates[4]		25.04	18.14	43.18	16.61	16.61	33.21	450.49
			Trip Generation		28	20	48	18	19	37	496
			Automated Car Wash	3.000 TSF							
			Trip Generation Rates[5]		7.10	7.10	14.20	7.10	7.10	14.20	142.00
			Trip Generation		21	22	43	21	22	43	426
			Fast-Food Restaurant with Drive-Through Window	3.268 TSF							
			Trip Generation Rates[10]		22.75	21.86	44.61	17.18	15.85	33.03	467.48
			Trip Generation		74	72	146	56	52	108	1,528
			Pass By	-50%	-37	-36	-73	-28	-26	-54	-764
			Net New		37	36	73	28	26	54	764
			Total Net New Trips		101	93	194	91	91	182	2,236
31	223	Omega Paving	Trip Generation		NominalTrips						
32	229	Kaiser Permanente Medical Office	Medical-Dental Office Building	50.800 TSF							
			Trip Generation Rates[13]		2.45	0.65	3.10	1.18	2.75	3.93	36.00
			Trip Generation		124	33	157	60	140	200	1,829
33	231	The View Church	Church	12.638 TSF							
			Trip Generation Rates[14]		0.20	0.12	0.32	0.22	0.27	0.49	7.60
			Trip Generation		3	1	4	3	3	6	96

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Cumul Project No.	Map Id	Project Title	Land Use	Units	Peak Hours						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
34	215	Burger King	Fast-Food Restaurant with Drive-Through Window	2.158 TSF							
			Trip Generation Rates[10]		22.75	21.86	44.61	17.18	15.85	33.03	467.48
			Trip Generation		49	47	96	37	34	71	1,009
			Pass By	-50%	-25	-24	-48	-19	-17	-36	-505
			Net New		24	23	48	18	17	35	504
35	157	McCall-Encanto Gas Station	Convenience Store/Gas Station	3.200 TSF							
			Trip Generation Rates[3]		28.26	28.26	56.52	27.26	27.26	54.52	700.43
			Trip Generation		90	91	181	87	87	174	2,241
			Pass By	-76% AM	-68	-69	-138	-65	-65	-131	-1,692
			Net New	-75% PM	22	22	43	22	22	43	549
			Gasoline/Service Station	12 VFP							
			Trip Generation Rates[6]		5.14	5.14	10.28	6.96	6.96	13.91	172.01
			Trip Generation		62	61	123	83	84	167	2,064
			Pass By	-63% AM	-39	-38	-77	-47	-48	-95	-1,238
			Net New	-57% PM	23	23	46	36	36	72	826
			Automated Car Wash	1.140 TSF							
			Trip Generation Rates[5]		7.10	7.10	14.20	7.10	7.10	14.20	142.00
			Trip Generation		8	8	16	8	8	16	162
			Fast-Food Restaurant with Drive-Through Window	3.900 TSF							
			Trip Generation Rates[10]		22.75	21.86	44.61	17.18	15.85	33.03	467.48
			Trip Generation		89	85	174	67	62	129	1,823
			Pass By	-50%	-45	-43	-87	-34	-31	-65	-912
			Net New		44	42	87	33	31	64	911
			Total Net New Trips		97	95	192	99	97	195	2,448
36	14	McCall Square (Rancon)	Mini Warehouse	150.541 TSF							
			Trip Generation Rates[11]		0.05	0.04	0.09	0.07	0.08	0.15	1.45
			Trip Generation		8	6	14	11	12	23	218
			Shopping Plaza (40-150k)	84.200 TSF							
			Trip Generation Rates[15]		2.19	1.34	3.53	4.33	4.70	9.03	94.49
			Trip Generation		184	113	297	365	395	760	7,956
			Pass By	-40%	-74	-45	-119	-146	-158	-304	-3,182
			Net New		110	68	178	219	237	456	4,774
			Total Net New Trips		118	74	192	230	249	479	4,992
37	204	New Wireless Communication Facility	Trip Generation		NominalTrips						
38	187	Menifee Self Storage	Mini Warehouse	45.075 TSF							
			Trip Generation Rates[11]		0.05	0.04	0.09	0.07	0.08	0.15	1.45
			Trip Generation		2	2	4	3	4	7	65
39	226	Medical Office Building	Medical-Dental Office Building	9.103 TSF							
			Trip Generation Rates[13]		2.45	0.65	3.10	1.18	2.75	3.93	36.00
			Trip Generation		22	6	28	11	25	36	328
40	203	Hampton Inn	Business Hotel	71 Rooms							
			Trip Generation Rates[8]		0.14	0.22	0.36	0.17	0.14	0.31	4.02
					10	16	26	12	10	22	285
Industrial Projects											
41	191	COMPASS - Project Site 2 Wheat Warehouse	Warehousing	87.770 TSF							
			Trip Generation Rates[17]		0.15	0.05	0.200	0.07	0.15	0.226	2.621
					13	5	18	7	13	20	230
42	1	CADO Menifee Industrial Warehouse	High-Cube Transload and Short-Term Storage Warehouse	700.037 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					54	24	78	25	56	81	1,218
43	189	COMPASS - Project Site 1 Corsica Business Park	Warehousing	154.831 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					23	8	31	11	24	35	406

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Appendix C: Cumulative Projects Trip Generation

Cumul Project No.	Map Id	Project Title	Land Use	Units	Peak Hours						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
44	196	Ares Warehouse on Murrieta	High-Cube Transload and Short-Term Storage Warehouse	497.400 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					38	17	55	18	39	57	865
			General Office Building	20.320 TSF							
			Trip Generation Rates[19]		1.34	0.18	1.52	0.24	1.20	1.44	10.840
					27	4	31	5	24	29	220
45	197	Northern Gateway Commerce Center	High-Cube Transload and Short-Term Storage Warehouse	1,286.607 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					99	44	143	45	103	148	2,238
46	197	COMPASS - Project Site 3 Ethanac and Evans Warehouse	Warehousing	138.546 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					20	8	28	10	21	31	363
			General Office Building	6.000 TSF							
			Trip Generation Rates[19]		1.34	0.18	1.52	0.24	1.20	1.44	10.840
					8	1	9	1	8	9	65
47	174	Ethanac & Barnett Warehouse	Warehousing	103.069 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					15	6	21	8	15	23	270
			Manufacturing	12.496 TSF							
			Trip Generation Rates[20]		0.52	0.16	0.680	0.23	0.51	0.740	4.750
					6	2	8	3	6	9	59
			General Office Building	10.000 TSF							
			Trip Generation Rates[19]		1.34	0.18	1.52	0.24	1.20	1.44	10.840
					13	2	15	2	12	14	108
48	210	Northern Gateway Logistics Center	Warehousing	411.829 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					60	23	83	31	62	93	1,080
49	188	United Carports Warehouse	Warehousing	58.643 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					9	3	12	4	9	13	154
50	184	Mapes and Sherman Warehouse	Warehousing	277.578 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					41	15	56	21	42	63	728
51	198	Trumble and Watson Warehouse	High-Cube Transload and Short-Term Storage Warehouse	312.631 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					24	11	35	11	25	36	544
			General Office Building	15.000 TSF							
			Trip Generation Rates[19]		1.34	0.18	1.52	0.24	1.20	1.44	10.840
					20	3	23	4	18	22	163
52	217	Ethanac Business Park	High-Cube Transload and Short-Term Storage Warehouse	264.710 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					20	9	29	9	22	31	460
53	151	Menifee Commerce Center	High-Cube Transload and Short-Term Storage Warehouse	1,640.130 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					126	56	182	58	131	189	2,853
54	193	Motte Business Center	High-Cube Transload and Short-Term Storage Warehouse	928.638 TSF							
			Trip Generation Rates[18]		0.077	0.034	0.111	0.035	0.080	0.115	1.739
					71	32	103	33	74	107	1,615
			General Office Building	10.000 TSF							
			Trip Generation Rates[19]		1.34	0.18	1.52	0.24	1.20	1.44	10.840
					13	2	15	2	12	14	108
			Warehousing	200.000 TSF							
			Trip Generation Rates[17]		0.147	0.054	0.200	0.074	0.151	0.226	2.621
					29	11	40	15	30	45	524
55	194	Nova Power Bank Project	Trip Generation		NominalTrips						
56	201	Double Butte BESS	Trip Generation		NominalTrips						

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Appendix C: Cumulative Projects Trip Generation

Cumul Project No.	Map Id	Project Title	Land Use	Units	Peak Hours						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
57	195	McLaughlin San Jacinto Warehouses	High-Cube Transload and Short-Term Storage Warehouse	491.467 TSF	0.077	0.034	0.111	0.035	0.080	0.115	1.739
			Trip Generation Rates[18]		38	16	54	17	40	57	855
Mixed Use Projects											
58	202	Beyond Menifee	Single Family Detached Housing	240 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					44	124	168	142	84	226	2,263
			Shopping Plaza (40-150k)	71.100 TSF							
			Trip Generation Rates[15]		2.19	1.34	3.53	4.33	4.70	9.03	94.49
			Trip Generation		156	95	251	308	334	642	6,718
			Pass By	-40%	-62	-38	-100	-123	-134	-257	-2,687
			Net New		94	57	151	185	200	385	4,031
			Convenience Store/Gas Station	7.460 TSF							
			Trip Generation Rates[21]		20.30	20.30	40.59	24.24	24.24	48.48	624.20
			Trip Generation		151	152	303	181	181	362	4,657
			Pass By	-76% AM	-115	-116	-230	-136	-136	-272	-3,516
			Net New	-75% PM	36	36	73	45	45	90	1,141
			Automated Car Wash	1.790 TSF							
			Trip Generation Rates[5]		7.10	7.10	14.20	7.10	7.10	14.20	142.00
			Trip Generation		13	12	25	13	12	25	254
			Convenience Store/Gas Station	5.890 TSF							
			Trip Generation Rates[21]		20.30	20.30	40.59	24.24	24.24	48.48	624.20
			Trip Generation		120	119	239	143	143	286	3,677
			Pass By	-76% AM	-91	-90	-182	-107	-107	-215	-2,776
			Net New	-75% PM	29	29	57	36	36	71	901
			Total Net New Trips		216	258	474	421	377	797	8,590
59	147	Menifee Village TTM	Single Family Detached Housing	91 DU							
			Trip Generation Rates[1]		0.18	0.52	0.70	0.59	0.35	0.94	9.43
					17	47	64	54	32	86	858
Total Net Trip Generation					**3,384**	**2,674**	**6,060**	**3,263**	**3,922**	**7,183**	**78,422**

Notes: DU=Dwelling Units, TSF=Thousand Square Feet

[1] Trip generation based on rates for Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[2] Trip generation based on rates for Land Use 220 - "Multifamily Housing (Low-Rise)" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[3] Trip generation based on rates for Land Use 945 - "Convenience Store/Gas Station - VFP (9-15)" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[4] Trip generation based on rates for Land Use 933 - "Fast-Food Restaurant without Drive-Through Window" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[5] Trip generation based on rates for Land Use 948 - "Automated Car Wash" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition). Wkdy avg. rate for trip gen for 1000 Sq.ft. is available for PM only. PM rate used for AM. Daily rate is 10 times the PM rate.

[6] Trip generation based on rates for Land Use 944 - "Gasoline Service Station" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[7] Trip generation based on rates for Land Use 950 - "Truck Stop" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[8] Trip generation based on rates for Land Use 311 - "All Suites Hotel" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[9] Trip generation based on rates for Land Use 932 - "High-Turnover(Sit-Down) Restaurant" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[10] Trip generation based on rates for Land Use 934 - "Fast-Food Restaurant with Drive-Through Window" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[11] Trip generation based on rates for Land Use 151 - "Mini Warehouse" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[12] Trip generation based on rates for Land Use 110 - "General Light Industrial" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[13] Trip generation based on rates for Land Use 720 - "Medical Dental Office Building" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[14] Trip generation based on rates for Land Use 560 - "Church" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[15] Trip generation based on rates for Land Use 821 - " Shopping Plaza (40-150k)" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[16] Trip generation based on rates for Land Use 312 - "Business Hotel" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[17] Trip generation based on rates for Land Use 150 - "Warehousing" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition). Refer to Appendix for PCE Conversion.

[18] Trip generation based on PCE rates for Land Use 154 - "High-Cube Transload and Short-Term Warehouse" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition). Refer to Appendix for PCE

[19] Trip generation based on rates for Land Use 710 - "General Office Building" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[20] Trip generation based on rates for Land Use 140 - "Manufacturing" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

[21] Trip generation based on rates for Land Use 945 - "Convenience Store/Gas Station - VFP (2-8)" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).

Pass-By rates based on 2021 Pass-By Tables for ITE Trip Generaion.

APPENDIX D:
Traffic Counts (Intersection and Roadway Segment)

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

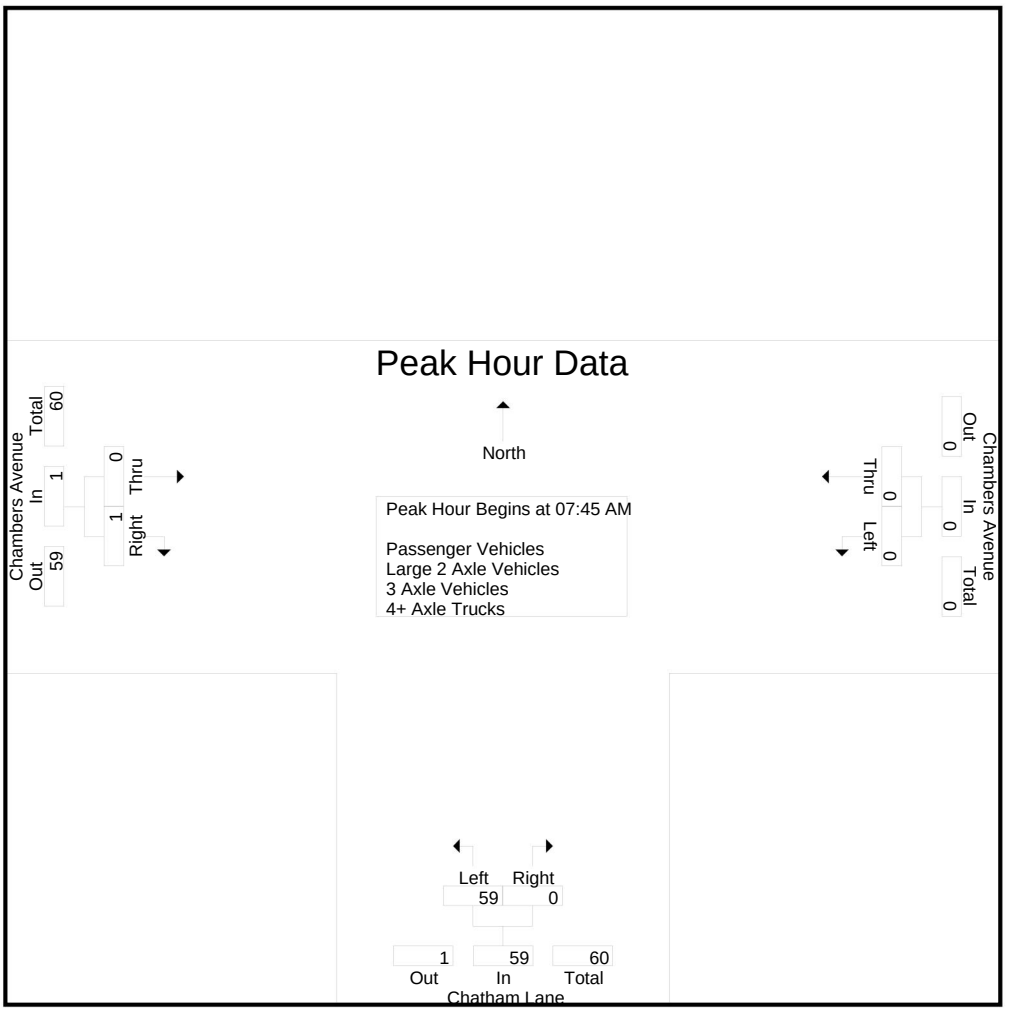
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	1	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	2	0	2	0	0	0	2
07:45 AM	0	0	0	10	0	10	0	1	1	11
Total	0	0	0	12	0	12	0	2	2	14
08:00 AM	0	0	0	14	0	14	0	0	0	14
08:15 AM	0	0	0	27	0	27	0	0	0	27
08:30 AM	0	0	0	8	0	8	0	0	0	8
08:45 AM	0	0	0	2	0	2	0	0	0	2
Total	0	0	0	51	0	51	0	0	0	51
Grand Total	0	0	0	63	0	63	0	2	2	65
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	96.9	0	96.9	0	3.1	3.1	
Passenger Vehicles	0	0	0	63	0	63	0	1	1	64
% Passenger Vehicles	0	0	0	100	0	100	0	50	50	98.5
Large 2 Axle Vehicles	0	0	0	0	0	0	0	1	1	1
% Large 2 Axle Vehicles	0	0	0	0	0	0	0	50	50	1.5
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	10	0	10	0	**1**	**1**	11
08:00 AM	0	0	0	14	0	14	0	0	0	14
08:15 AM	0	0	0	**27**	0	**27**	0	0	0	**27**
08:30 AM	0	0	0	8	0	8	0	0	0	8
Total Volume	0	0	0	59	0	59	0	1	1	60
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.546	.000	.546	.000	.250	.250	.556

Counts Unlimited, Inc.
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City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:00 AM		
+0 mins.	0	0	0	10	0	10	0	**1**	**1**
+15 mins.	0	0	0	14	0	14	0	0	0
+30 mins.	0	0	0	**27**	0	**27**	0	0	0
+45 mins.	0	0	0	8	0	8	0	1	1
Total Volume	0	0	0	59	0	59	0	2	2
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.546	.000	.546	.000	.500	.500

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City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles

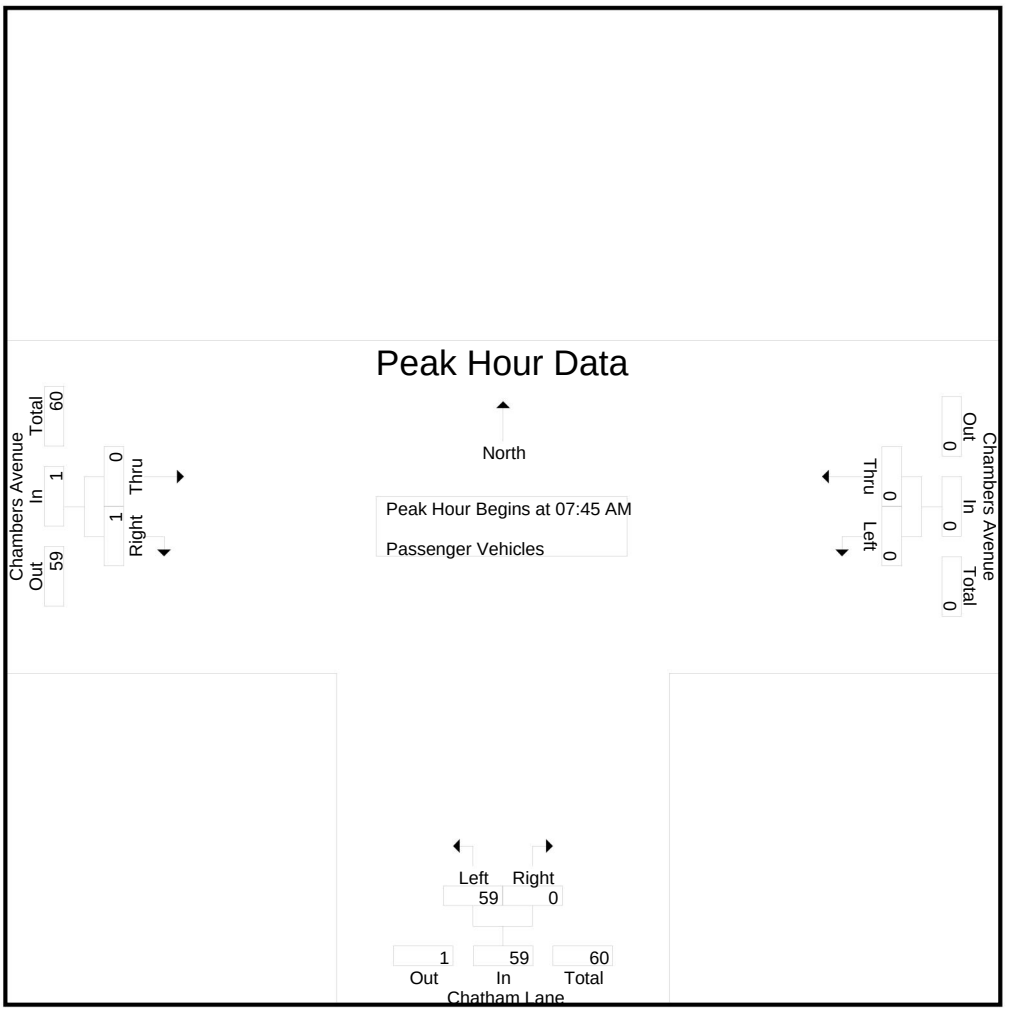
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	2	0	2	0	0	0	2
07:45 AM	0	0	0	10	0	10	0	1	1	11
Total	0	0	0	12	0	12	0	1	1	13
08:00 AM	0	0	0	14	0	14	0	0	0	14
08:15 AM	0	0	0	27	0	27	0	0	0	27
08:30 AM	0	0	0	8	0	8	0	0	0	8
08:45 AM	0	0	0	2	0	2	0	0	0	2
Total	0	0	0	51	0	51	0	0	0	51
Grand Total	0	0	0	63	0	63	0	1	1	64
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	98.4	0	98.4	0	1.6	1.6	

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	10	0	10	0	**1**	**1**	11
08:00 AM	0	0	0	14	0	14	0	0	0	14
08:15 AM	0	0	0	**27**	0	**27**	0	0	0	**27**
08:30 AM	0	0	0	8	0	8	0	0	0	8
Total Volume	0	0	0	59	0	59	0	1	1	60
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.546	.000	.546	.000	.250	.250	.556

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City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	10	0	10	0	**1**	**1**
+15 mins.	0	0	0	14	0	14	0	0	0
+30 mins.	0	0	0	**27**	0	**27**	0	0	0
+45 mins.	0	0	0	8	0	8	0	0	0
Total Volume	0	0	0	59	0	59	0	1	1
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.546	.000	.546	.000	.250	.250

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City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

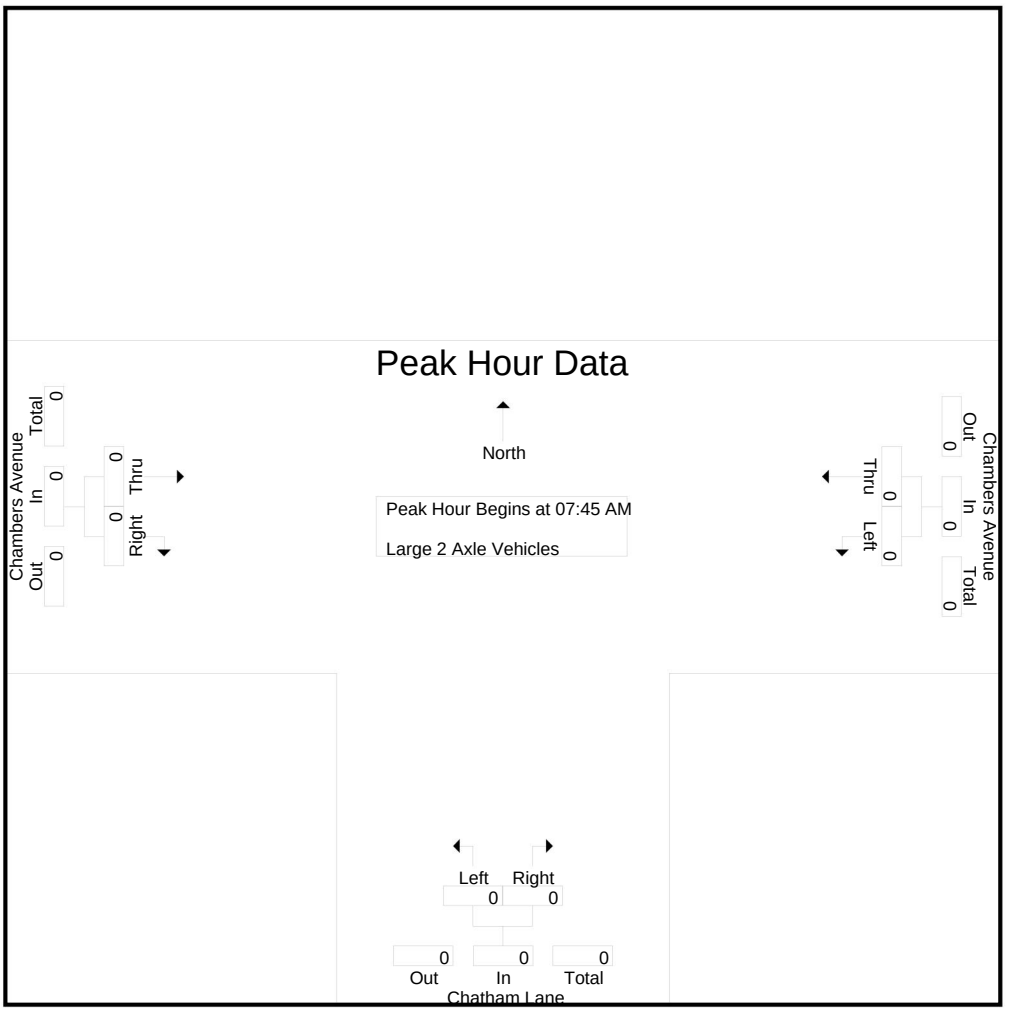
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	1	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	1	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	1	1
Apprch %	0	0		0	0		0	100		
Total %	0	0	0	0	0	0	0	100	100	

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Counts Unlimited, Inc.
PO Box 1178
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City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 3 Axle Vehicles

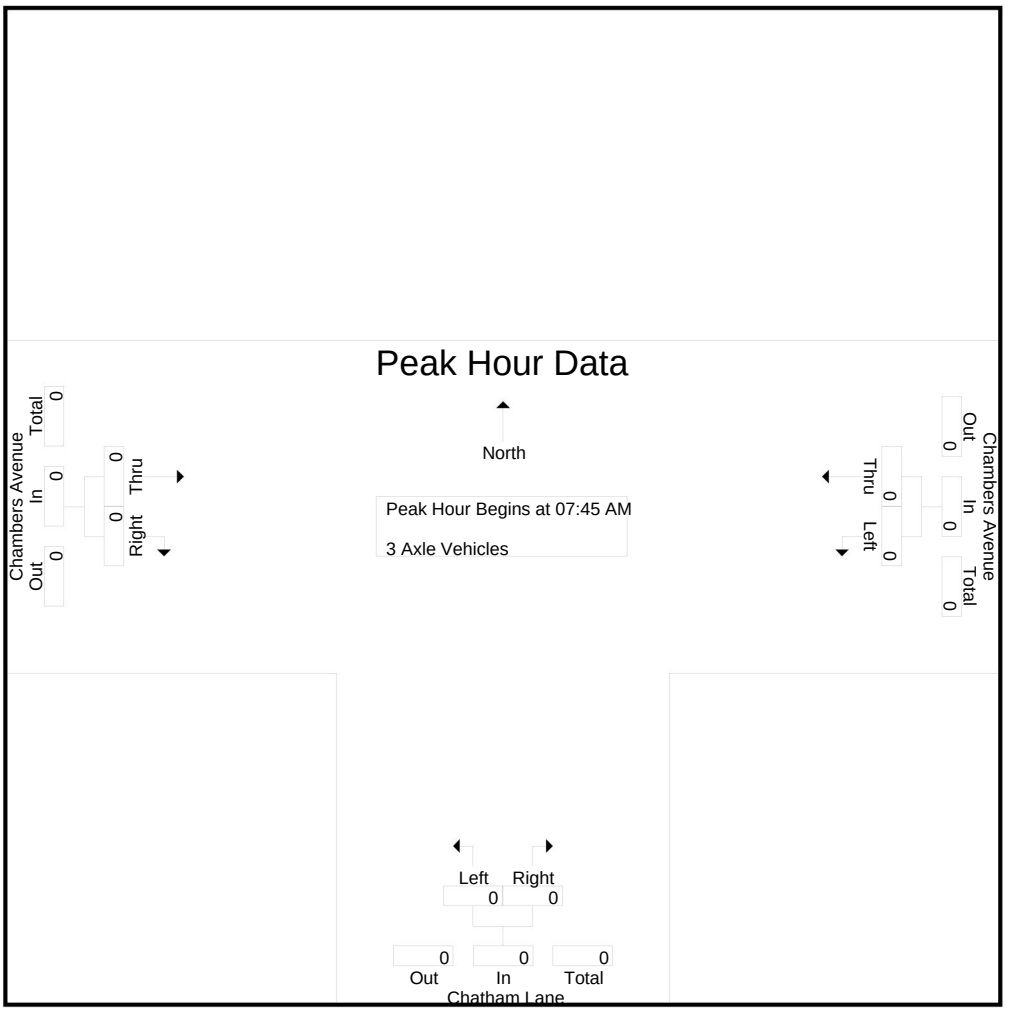
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
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E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
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Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

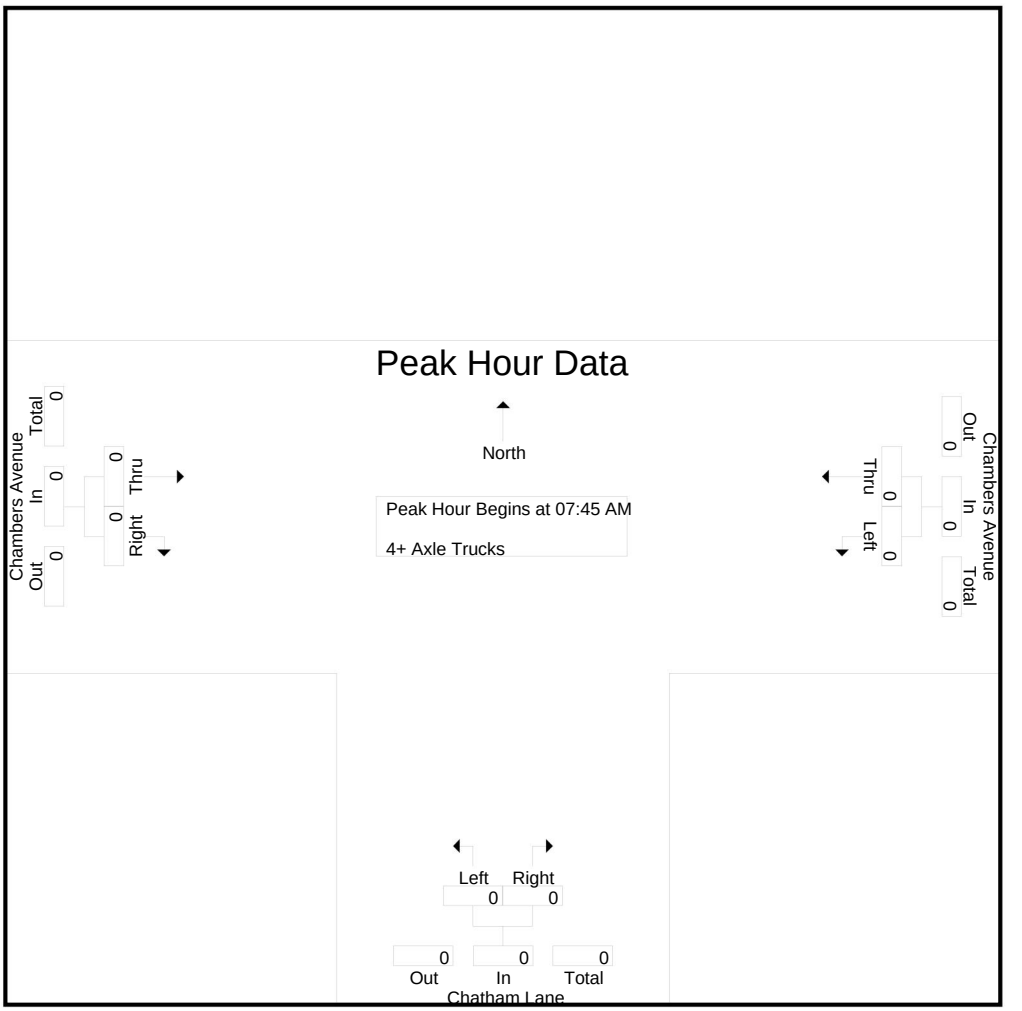
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Weather: Clear

File Name : 01_MEN_Chat_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

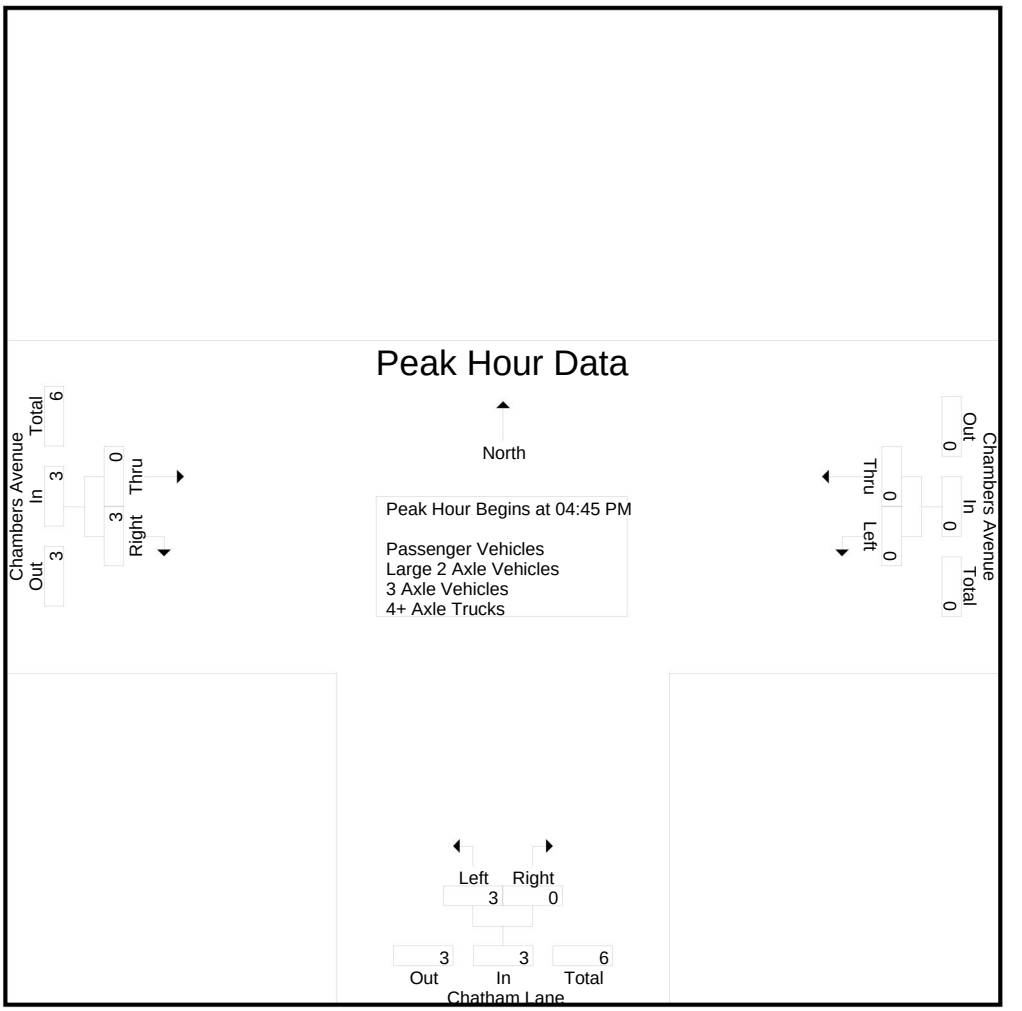
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	1	1	1
04:30 PM	0	0	0	1	0	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	1	0	1	0	2	2	3
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	1	0	2	2	3
05:30 PM	0	0	0	2	0	2	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	3	0	2	2	5
Grand Total	0	0	0	4	0	4	0	4	4	8
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	50	0	50	0	50	50	
Passenger Vehicles	0	0	0	4	0	4	0	4	4	8
% Passenger Vehicles	0	0	0	100	0	100	0	100	100	100
Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	1	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	1	0	**2**	**2**	**3**
05:30 PM	0	0	0	**2**	0	**2**	0	0	0	2
Total Volume	0	0	0	3	0	3	0	3	3	6
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.375	.000	.375	.000	.375	.375	.500

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Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:45 PM			04:30 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	1	1
+30 mins.	0	0	0	1	0	1	0	0	0
+45 mins.	0	0	0	**2**	0	**2**	0	**2**	**2**
Total Volume	0	0	0	3	0	3	0	3	3
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.375	.000	.375	.000	.375	.375

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City of Menifee
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Weather: Clear

File Name : 01_MEN_Chat_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles

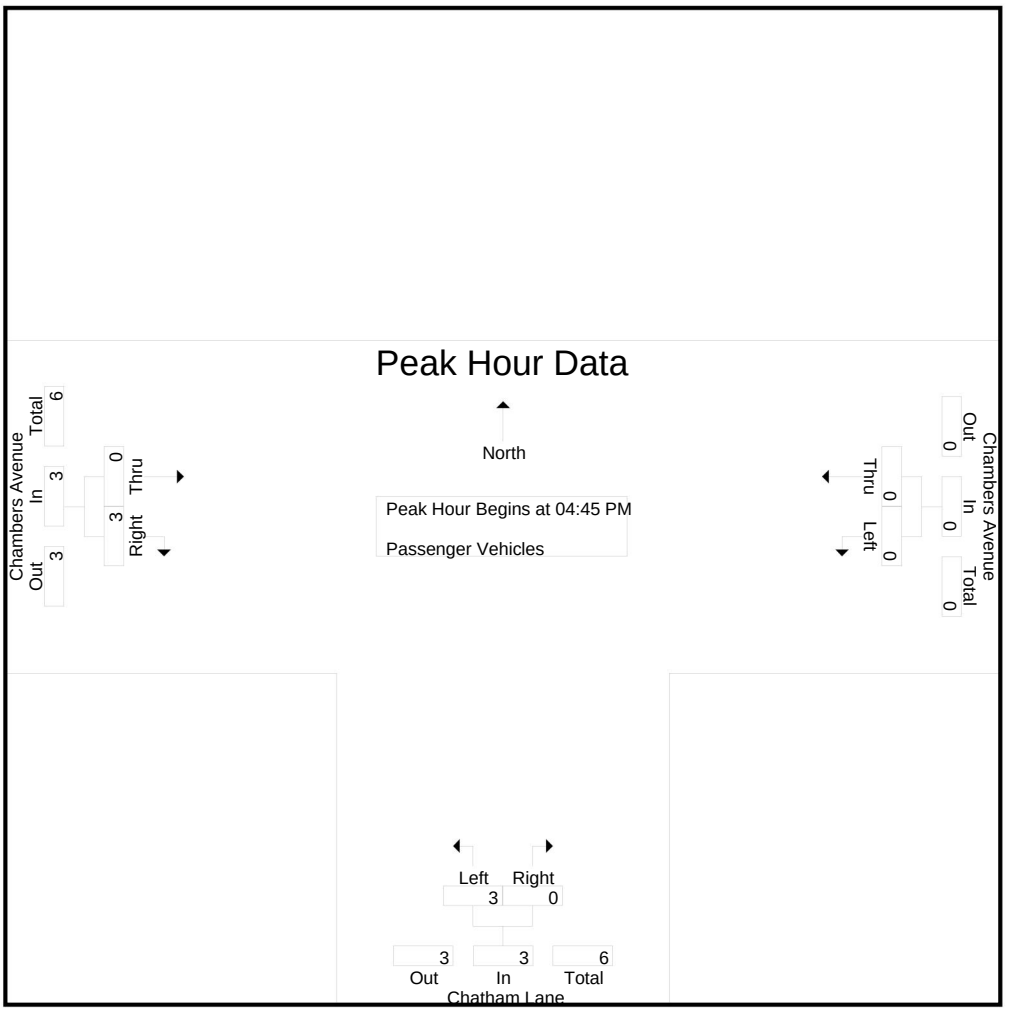
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	1	1	1
04:30 PM	0	0	0	1	0	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	1	0	1	0	2	2	3
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	1	0	2	2	3
05:30 PM	0	0	0	2	0	2	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	3	0	2	2	5
Grand Total	0	0	0	4	0	4	0	4	4	8
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	50	0	50	0	50	50	

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	1	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	1	0	**2**	**2**	**3**
05:30 PM	0	0	0	**2**	0	**2**	0	0	0	2
Total Volume	0	0	0	3	0	3	0	3	3	6
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.375	.000	.375	.000	.375	.375	.500

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Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	1	1
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	1	0	1	0	**2**	**2**
+45 mins.	0	0	0	**2**	0	**2**	0	0	0
Total Volume	0	0	0	3	0	3	0	3	3
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.375	.000	.375	.000	.375	.375

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City of Menifee
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E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- Large 2 Axle Vehicles

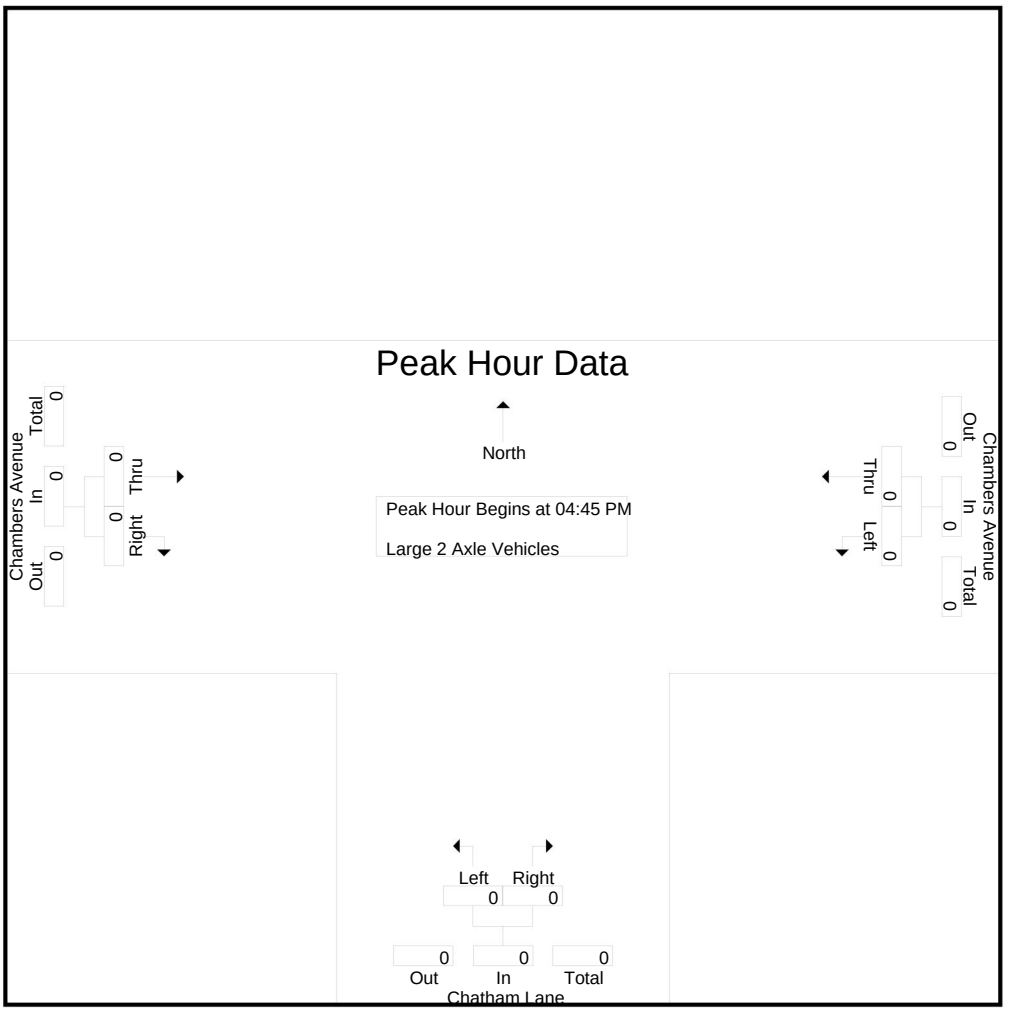
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Site Code : 99925111
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Groups Printed- 3 Axle Vehicles

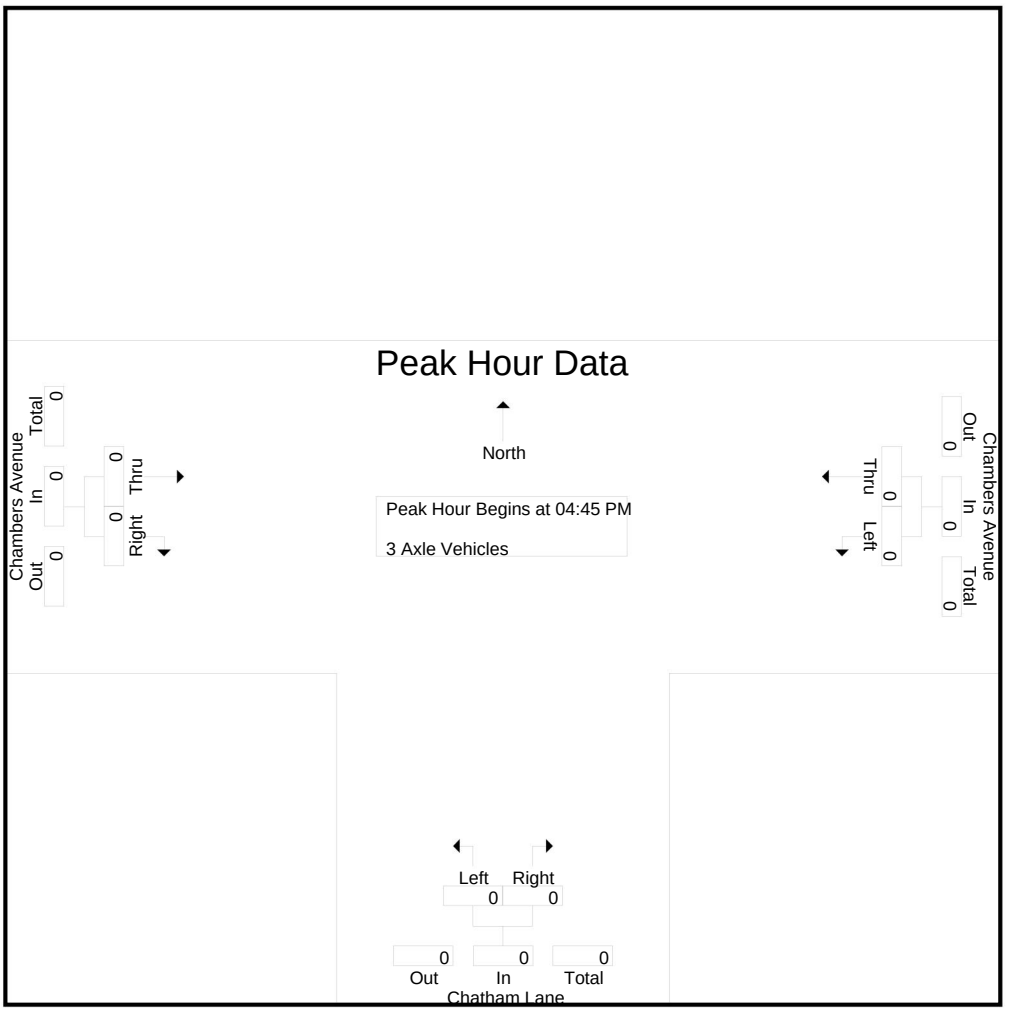
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
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File Name : 01_MEN_Chat_Cham PM
Site Code : 99925111
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Page No : 1

Groups Printed- 4+ Axle Trucks

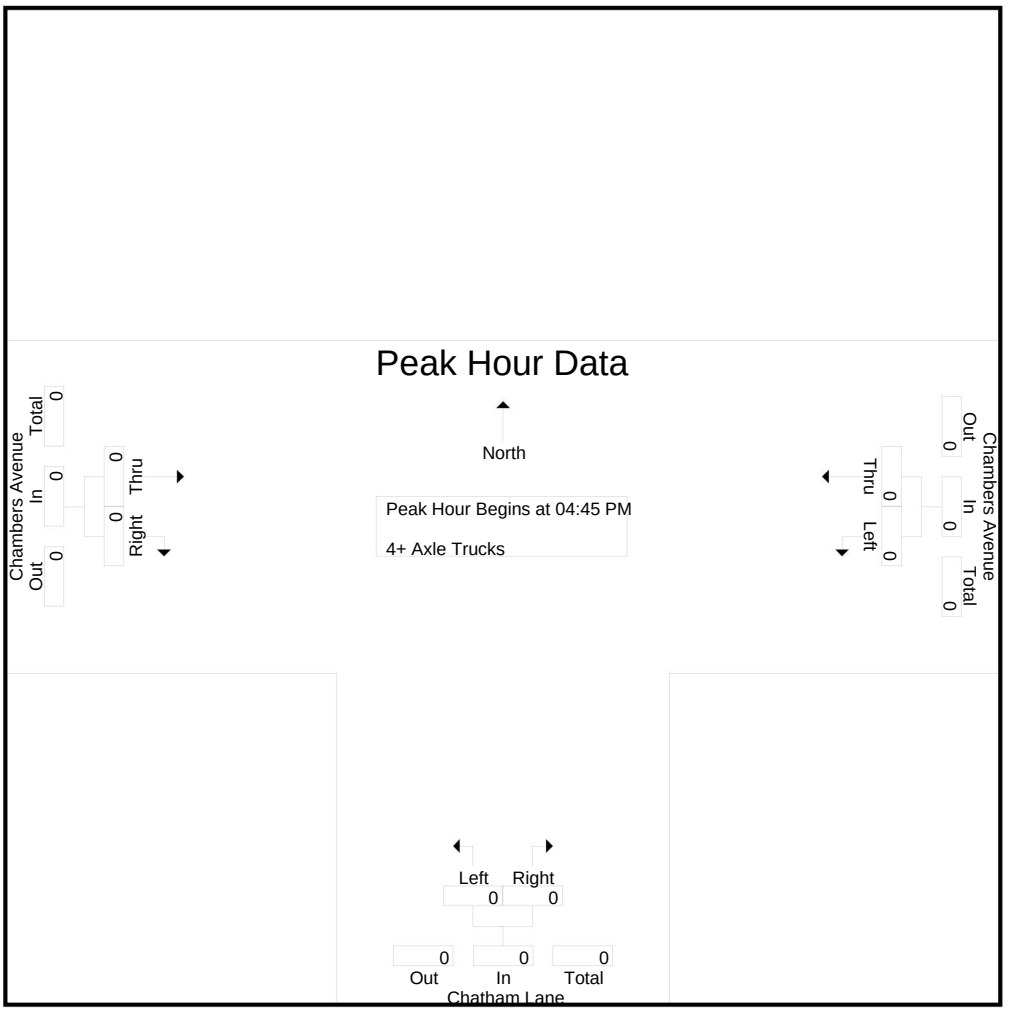
	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chambers Avenue Westbound			Chatham Lane Northbound			Chambers Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Chambers Avenue
Weather: Clear

File Name : 01_MEN_Chat_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

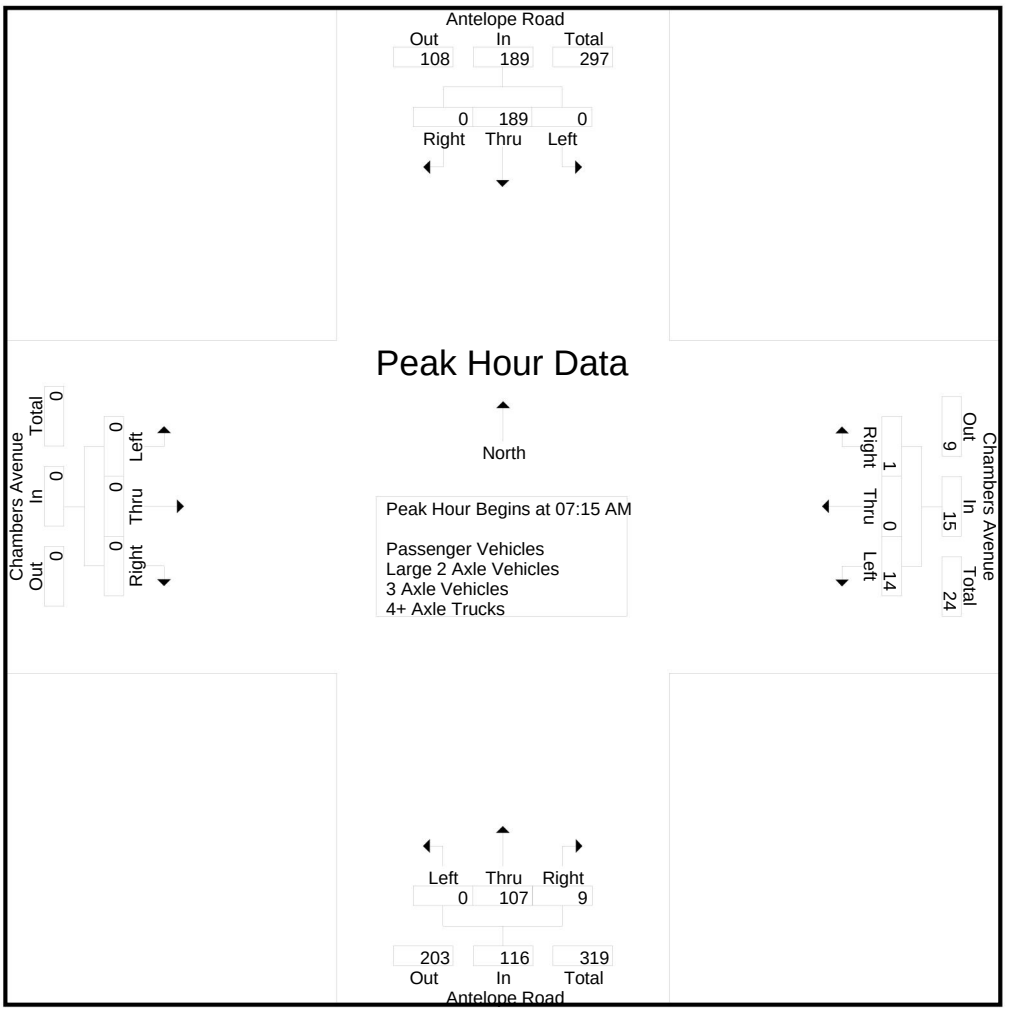
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	37	0	37	0	0	1	1	0	11	0	11	0	0	0	0	49
07:15 AM	0	33	0	33	1	0	1	2	0	20	2	22	0	0	0	0	57
07:30 AM	0	42	0	42	4	0	0	4	0	22	1	23	0	0	0	0	69
07:45 AM	0	56	0	56	5	0	0	5	0	38	2	40	0	0	0	0	101
Total	0	168	0	168	10	0	2	12	0	91	5	96	0	0	0	0	276
08:00 AM	0	58	0	58	4	0	0	4	0	27	4	31	0	0	0	0	93
08:15 AM	0	26	0	26	2	0	0	2	0	19	2	21	0	0	0	0	49
08:30 AM	0	34	0	34	1	0	0	1	0	23	0	23	0	0	0	0	58
08:45 AM	0	37	0	37	1	0	0	1	0	19	3	22	0	0	0	0	60
Total	0	155	0	155	8	0	0	8	0	88	9	97	0	0	0	0	260
Grand Total	0	323	0	323	18	0	2	20	0	179	14	193	0	0	0	0	536
Apprch %	0	100	0		90	0	10		0	92.7	7.3		0	0	0		
Total %	0	60.3	0	60.3	3.4	0	0.4	3.7	0	33.4	2.6	36	0	0	0	0	
Passenger Vehicles	0	317	0	317	18	0	2	20	0	176	14	190	0	0	0	0	527
% Passenger Vehicles	0	98.1	0	98.1	100	0	100	100	0	98.3	100	98.4	0	0	0	0	98.3
Large 2 Axle Vehicles	0	4	0	4	0	0	0	0	0	2	0	2	0	0	0	0	6
% Large 2 Axle Vehicles	0	1.2	0	1.2	0	0	0	0	0	1.1	0	1	0	0	0	0	1.1
3 Axle Vehicles	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% 3 Axle Vehicles	0	0.3	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0.2
4+ Axle Trucks	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% 4+ Axle Trucks	0	0.3	0	0.3	0	0	0	0	0	0.6	0	0.5	0	0	0	0	0.4

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	33	0	33	1	0	**1**	2	0	20	2	22	0	0	0	0	57
07:30 AM	0	42	0	42	4	0	0	4	0	22	1	23	0	0	0	0	69
07:45 AM	0	56	0	56	**5**	0	0	**5**	0	**38**	2	**40**	0	0	0	0	**101**
08:00 AM	0	**58**	0	**58**	4	0	0	4	0	27	**4**	31	0	0	0	0	93
Total Volume	0	189	0	189	14	0	1	15	0	107	9	116	0	0	0	0	320
% App. Total	0	100	0		93.3	0	6.7		0	92.2	7.8		0	0	0		
PHF	.000	.815	.000	.815	.700	.000	.250	.750	.000	.704	.563	.725	.000	.000	.000	.000	.792

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:00 AM			
+0 mins.	0	33	0	33	1	0	**1**	2	0	20	2	22	0	0	0	0
+15 mins.	0	42	0	42	4	0	0	4	0	22	1	23	0	0	0	0
+30 mins.	0	56	0	56	**5**	0	0	**5**	0	**38**	2	**40**	0	0	0	0
+45 mins.	0	**58**	0	**58**	4	0	0	4	0	27	**4**	31	0	0	0	0
Total Volume	0	189	0	189	14	0	1	15	0	107	9	116	0	0	0	0
% App. Total	0	100	0		93.3	0	6.7		0	92.2	7.8		0	0	0	
PHF	.000	.815	.000	.815	.700	.000	.250	.750	.000	.704	.563	.725	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles

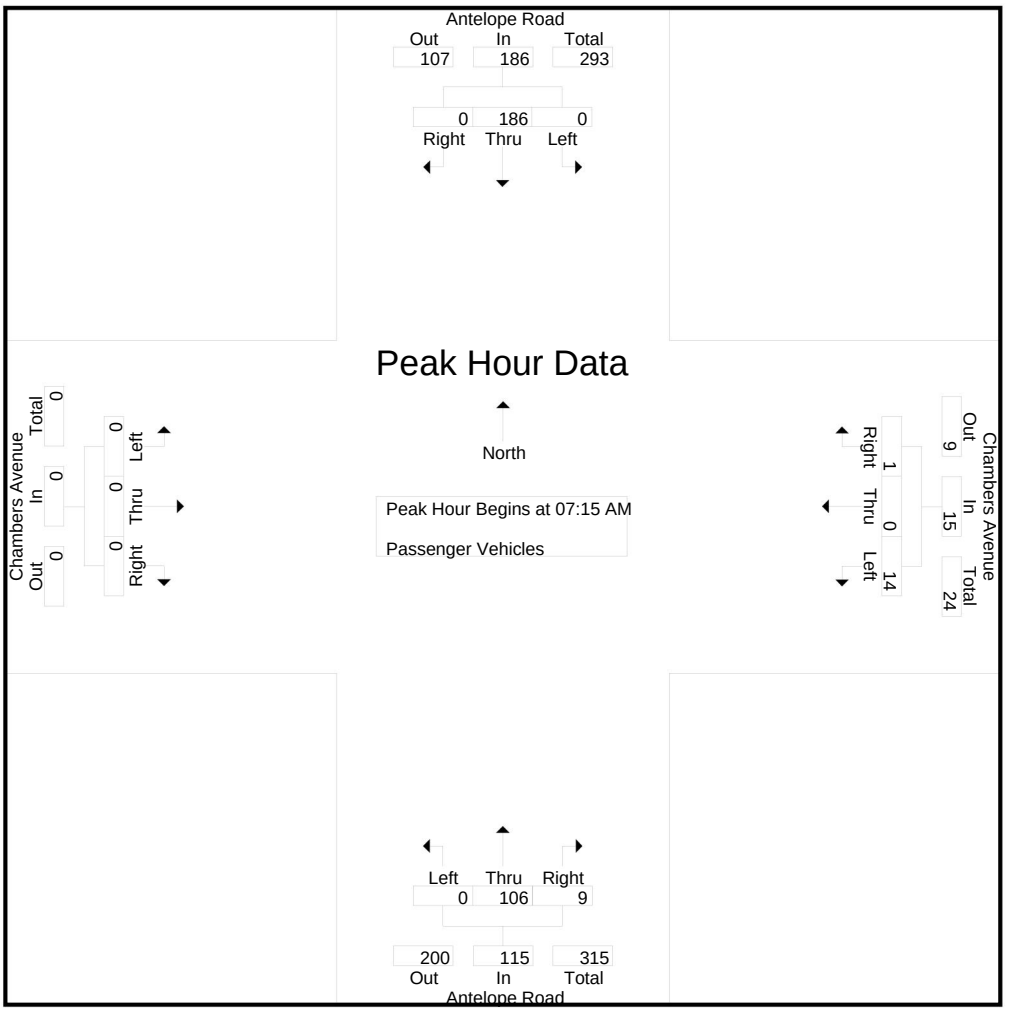
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	35	0	35	0	0	1	1	0	11	0	11	0	0	0	0	47
07:15 AM	0	33	0	33	1	0	1	2	0	19	2	21	0	0	0	0	56
07:30 AM	0	41	0	41	4	0	0	4	0	22	1	23	0	0	0	0	68
07:45 AM	0	55	0	55	5	0	0	5	0	38	2	40	0	0	0	0	100
Total	0	164	0	164	10	0	2	12	0	90	5	95	0	0	0	0	271
08:00 AM	0	57	0	57	4	0	0	4	0	27	4	31	0	0	0	0	92
08:15 AM	0	25	0	25	2	0	0	2	0	19	2	21	0	0	0	0	48
08:30 AM	0	34	0	34	1	0	0	1	0	23	0	23	0	0	0	0	58
08:45 AM	0	37	0	37	1	0	0	1	0	17	3	20	0	0	0	0	58
Total	0	153	0	153	8	0	0	8	0	86	9	95	0	0	0	0	256
Grand Total	0	317	0	317	18	0	2	20	0	176	14	190	0	0	0	0	527
Apprch %	0	100	0		90	0	10		0	92.6	7.4		0	0	0		
Total %	0	60.2	0	60.2	3.4	0	0.4	3.8	0	33.4	2.7	36.1	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	33	0	33	1	0	**1**	2	0	19	2	21	0	0	0	0	56
07:30 AM	0	41	0	41	4	0	0	4	0	22	1	23	0	0	0	0	68
07:45 AM	0	55	0	55	**5**	0	0	**5**	0	**38**	2	**40**	0	0	0	0	**100**
08:00 AM	0	**57**	0	**57**	4	0	0	4	0	27	**4**	31	0	0	0	0	92
Total Volume	0	186	0	186	14	0	1	15	0	106	9	115	0	0	0	0	316
% App. Total	0	100	0		93.3	0	6.7		0	92.2	7.8		0	0	0		
PHF	.000	.816	.000	.816	.700	.000	.250	.750	.000	.697	.563	.719	.000	.000	.000	.000	.790

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	33	0	33	1	0	**1**	2	0	19	2	21	0	0	0	0
+15 mins.	0	41	0	41	4	0	0	4	0	22	1	23	0	0	0	0
+30 mins.	0	55	0	55	**5**	0	0	**5**	0	**38**	2	**40**	0	0	0	0
+45 mins.	0	**57**	0	**57**	4	0	0	4	0	27	**4**	31	0	0	0	0
Total Volume	0	186	0	186	14	0	1	15	0	106	9	115	0	0	0	0
% App. Total	0	100	0		93.3	0	6.7		0	92.2	7.8		0	0	0	
PHF	.000	.816	.000	.816	.700	.000	.250	.750	.000	.697	.563	.719	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

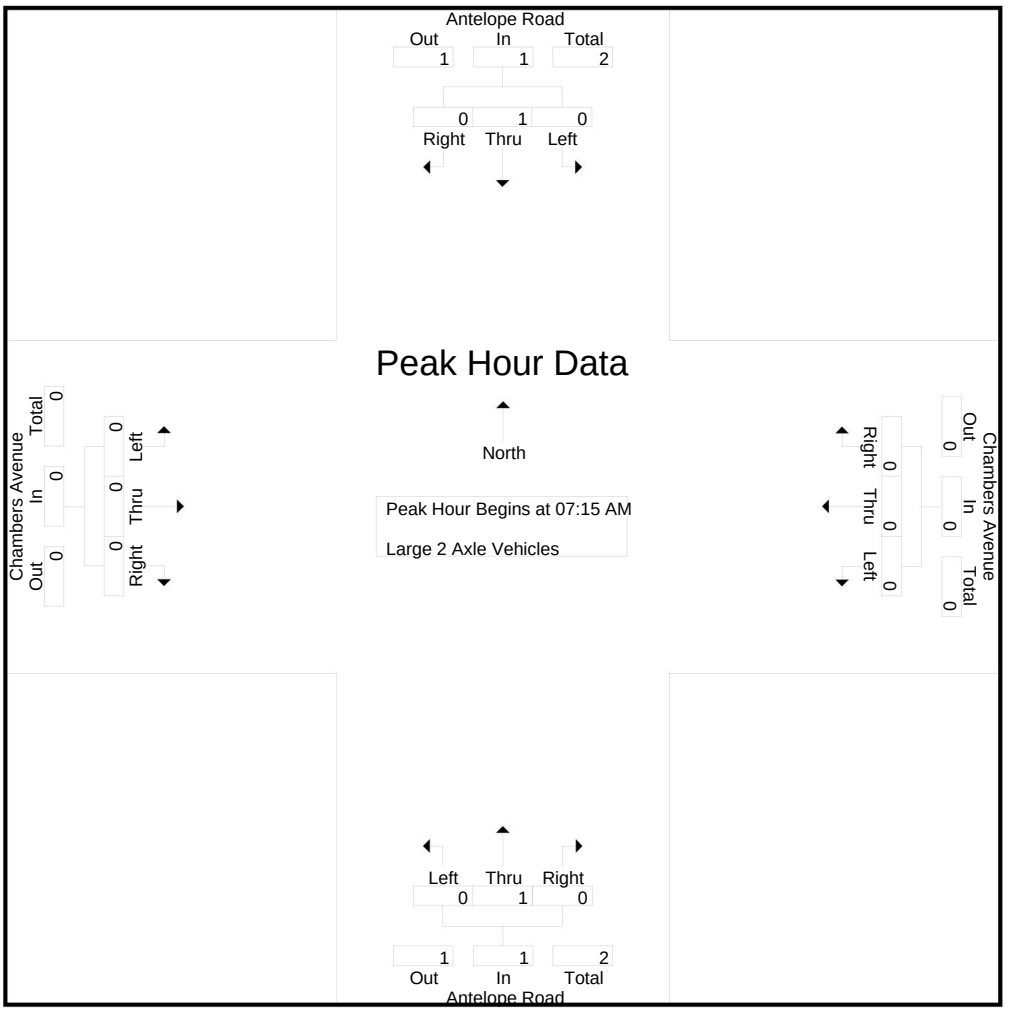
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	3	0	0	0	0	0	1	0	1	0	0	0	0	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Grand Total	0	4	0	4	0	0	0	0	0	2	0	2	0	0	0	0	6
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	66.7	0	66.7	0	0	0	0	0	33.3	0	33.3	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
07:30 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.500

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 3 Axle Vehicles

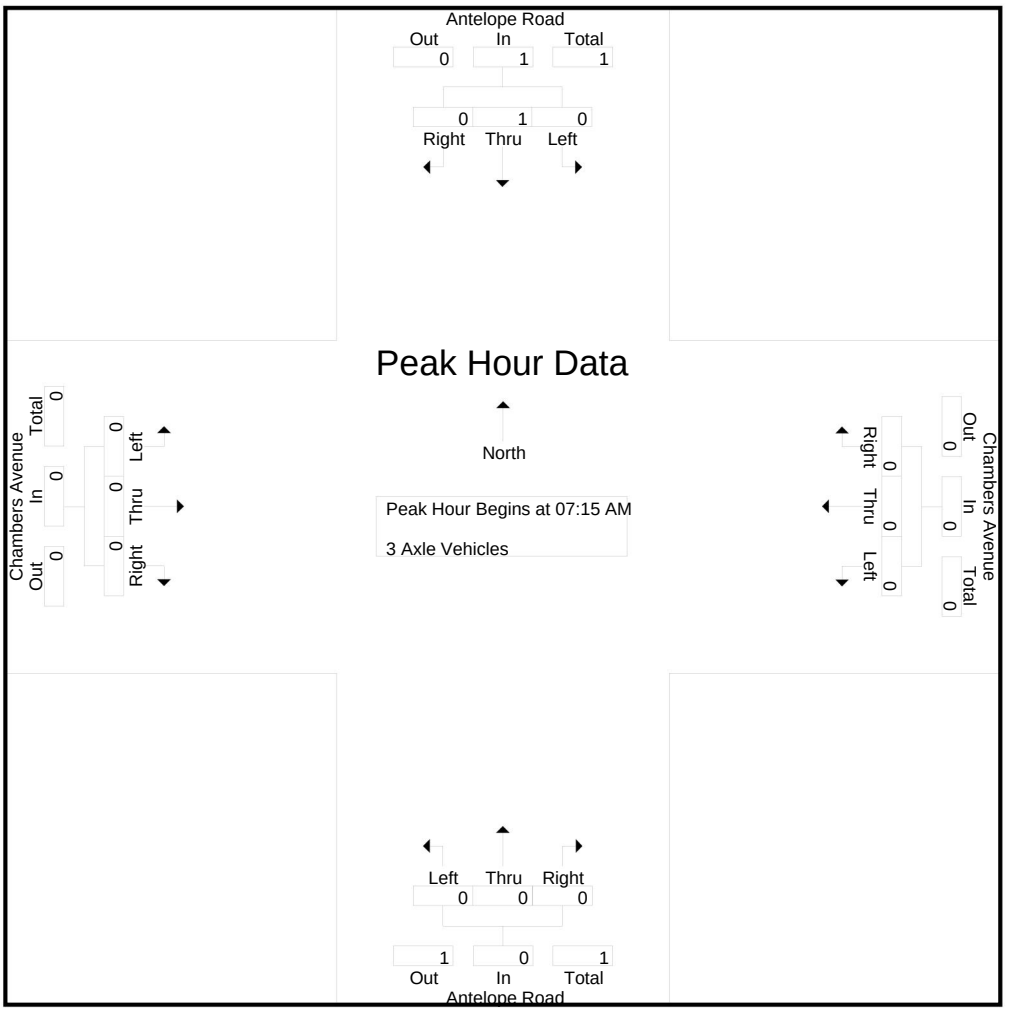
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0		0	0	0		0	0	0		0	0	0		
Total %	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

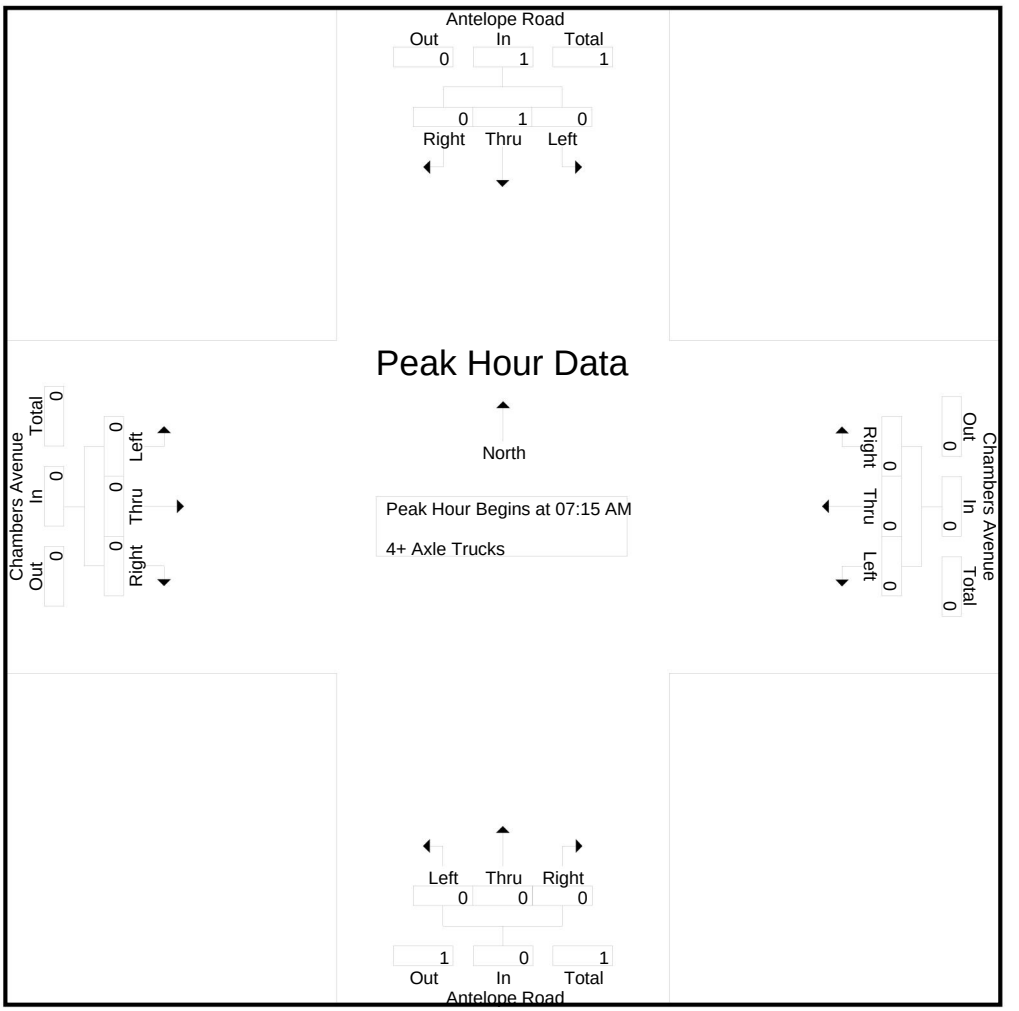
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Grand Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	50	0	50	0	0	0	0	0	50	0	50	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham AM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
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Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

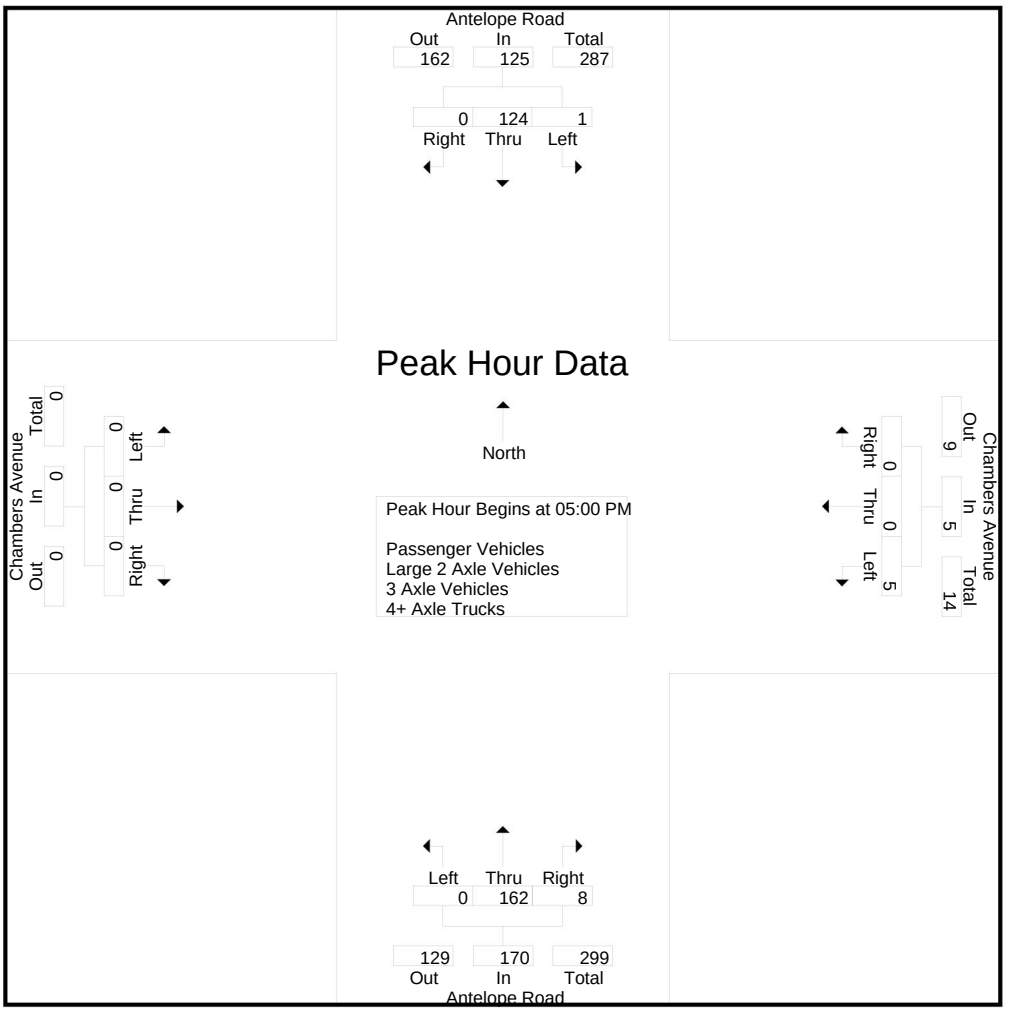
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	33	0	33	1	0	0	1	0	37	0	37	0	0	0	0	71
04:15 PM	0	39	0	39	2	0	0	2	0	38	3	41	0	0	0	0	82
04:30 PM	0	25	0	25	2	0	0	2	0	30	1	31	0	0	0	0	58
04:45 PM	0	27	0	27	3	0	0	3	0	33	6	39	0	0	0	0	69
Total	0	124	0	124	8	0	0	8	0	138	10	148	0	0	0	0	280
05:00 PM	0	23	0	23	1	0	0	1	0	41	3	44	0	0	0	0	68
05:15 PM	0	43	0	43	1	0	0	1	0	35	2	37	0	0	0	0	81
05:30 PM	0	27	0	27	2	0	0	2	0	43	1	44	0	0	0	0	73
05:45 PM	1	31	0	32	1	0	0	1	0	43	2	45	0	0	0	0	78
Total	1	124	0	125	5	0	0	5	0	162	8	170	0	0	0	0	300
Grand Total	1	248	0	249	13	0	0	13	0	300	18	318	0	0	0	0	580
Apprch %	0.4	99.6	0		100	0	0		0	94.3	5.7		0	0	0		
Total %	0.2	42.8	0	42.9	2.2	0	0	2.2	0	51.7	3.1	54.8	0	0	0	0	
Passenger Vehicles	1	248	0	249	13	0	0	13	0	297	18	315	0	0	0	0	577
% Passenger Vehicles	100	100	0	100	100	0	0	100	0	99	100	99.1	0	0	0	0	99.5
Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
% Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0.7	0	0.6	0	0	0	0	0.3
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0.3	0	0.3	0	0	0	0	0.2

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	23	0	23	1	0	0	1	0	41	**3**	44	0	0	0	0	68
05:15 PM	0	**43**	0	**43**	1	0	0	1	0	35	2	37	0	0	0	0	**81**
05:30 PM	0	27	0	27	**2**	0	0	**2**	0	**43**	1	44	0	0	0	0	73
05:45 PM	**1**	31	0	32	1	0	0	1	0	43	2	**45**	0	0	0	0	78
Total Volume	1	124	0	125	5	0	0	5	0	162	8	170	0	0	0	0	300
% App. Total	0.8	99.2	0		100	0	0		0	95.3	4.7		0	0	0		
PHF	.250	.721	.000	.727	.625	.000	.000	.625	.000	.942	.667	.944	.000	.000	.000	.000	.926

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Site Code : 99925111
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	23	0	23	1	0	0	1	0	41	**3**	44	0	0	0	0
+15 mins.	0	**43**	0	**43**	2	0	0	2	0	35	2	37	0	0	0	0
+30 mins.	0	27	0	27	2	0	0	2	0	**43**	1	44	0	0	0	0
+45 mins.	**1**	31	0	32	**3**	0	0	**3**	0	43	2	**45**	0	0	0	0
Total Volume	1	124	0	125	8	0	0	8	0	162	8	170	0	0	0	0
% App. Total	0.8	99.2	0		100	0	0		0	95.3	4.7		0	0	0	
PHF	.250	.721	.000	.727	.667	.000	.000	.667	.000	.942	.667	.944	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles

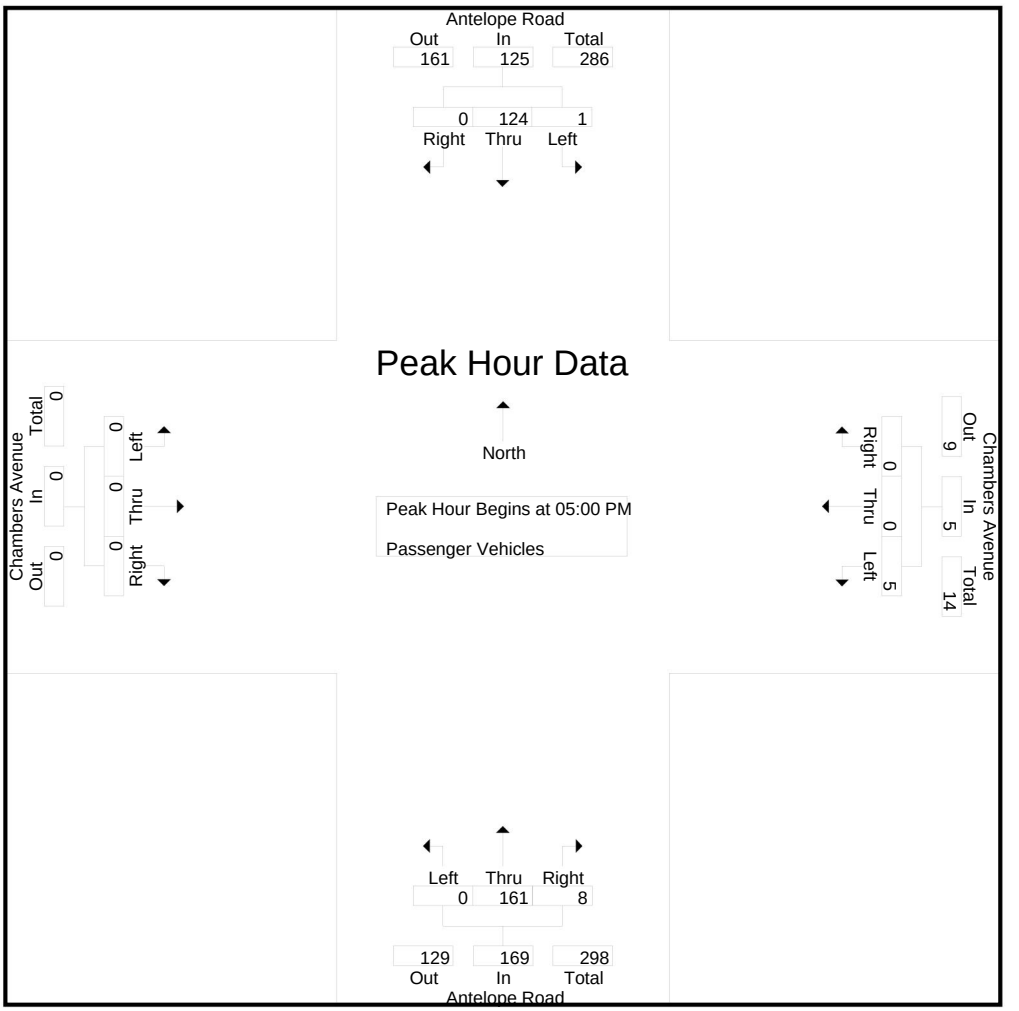
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	33	0	33	1	0	0	1	0	37	0	37	0	0	0	0	71
04:15 PM	0	39	0	39	2	0	0	2	0	36	3	39	0	0	0	0	80
04:30 PM	0	25	0	25	2	0	0	2	0	30	1	31	0	0	0	0	58
04:45 PM	0	27	0	27	3	0	0	3	0	33	6	39	0	0	0	0	69
Total	0	124	0	124	8	0	0	8	0	136	10	146	0	0	0	0	278
05:00 PM	0	23	0	23	1	0	0	1	0	41	3	44	0	0	0	0	68
05:15 PM	0	43	0	43	1	0	0	1	0	35	2	37	0	0	0	0	81
05:30 PM	0	27	0	27	2	0	0	2	0	42	1	43	0	0	0	0	72
05:45 PM	1	31	0	32	1	0	0	1	0	43	2	45	0	0	0	0	78
Total	1	124	0	125	5	0	0	5	0	161	8	169	0	0	0	0	299
Grand Total	1	248	0	249	13	0	0	13	0	297	18	315	0	0	0	0	577
Apprch %	0.4	99.6	0		100	0	0		0	94.3	5.7		0	0	0		
Total %	0.2	43	0	43.2	2.3	0	0	2.3	0	51.5	3.1	54.6	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	23	0	23	1	0	0	1	0	41	**3**	44	0	0	0	0	68
05:15 PM	0	**43**	0	**43**	1	0	0	1	0	35	2	37	0	0	0	0	**81**
05:30 PM	0	27	0	27	**2**	0	0	**2**	0	42	1	43	0	0	0	0	72
05:45 PM	**1**	31	0	32	1	0	0	1	0	**43**	2	**45**	0	0	0	0	78
Total Volume	1	124	0	125	5	0	0	5	0	161	8	169	0	0	0	0	299
% App. Total	0.8	99.2	0		100	0	0		0	95.3	4.7		0	0	0		
PHF	.250	.721	.000	.727	.625	.000	.000	.625	.000	.936	.667	.939	.000	.000	.000	.000	.923

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Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	23	0	23	1	0	0	1	0	41	**3**	44	0	0	0	0
+15 mins.	0	**43**	0	**43**	1	0	0	1	0	35	2	37	0	0	0	0
+30 mins.	0	27	0	27	**2**	0	0	**2**	0	42	1	43	0	0	0	0
+45 mins.	**1**	31	0	32	1	0	0	1	0	**43**	2	**45**	0	0	0	0
Total Volume	1	124	0	125	5	0	0	5	0	161	8	169	0	0	0	0
% App. Total	0.8	99.2	0		100	0	0		0	95.3	4.7		0	0	0	
PHF	.250	.721	.000	.727	.625	.000	.000	.625	.000	.936	.667	.939	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

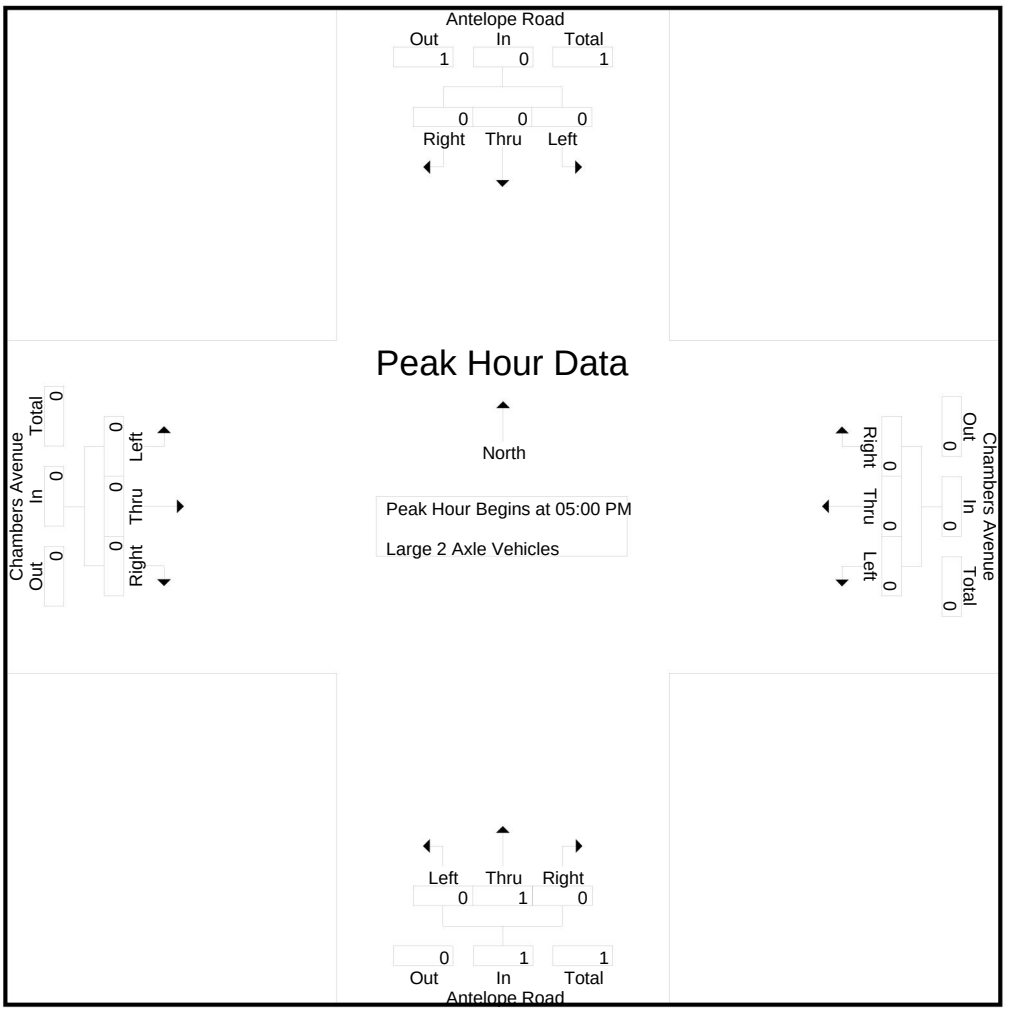
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250

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File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
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Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

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City of Menifee
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E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- 3 Axle Vehicles

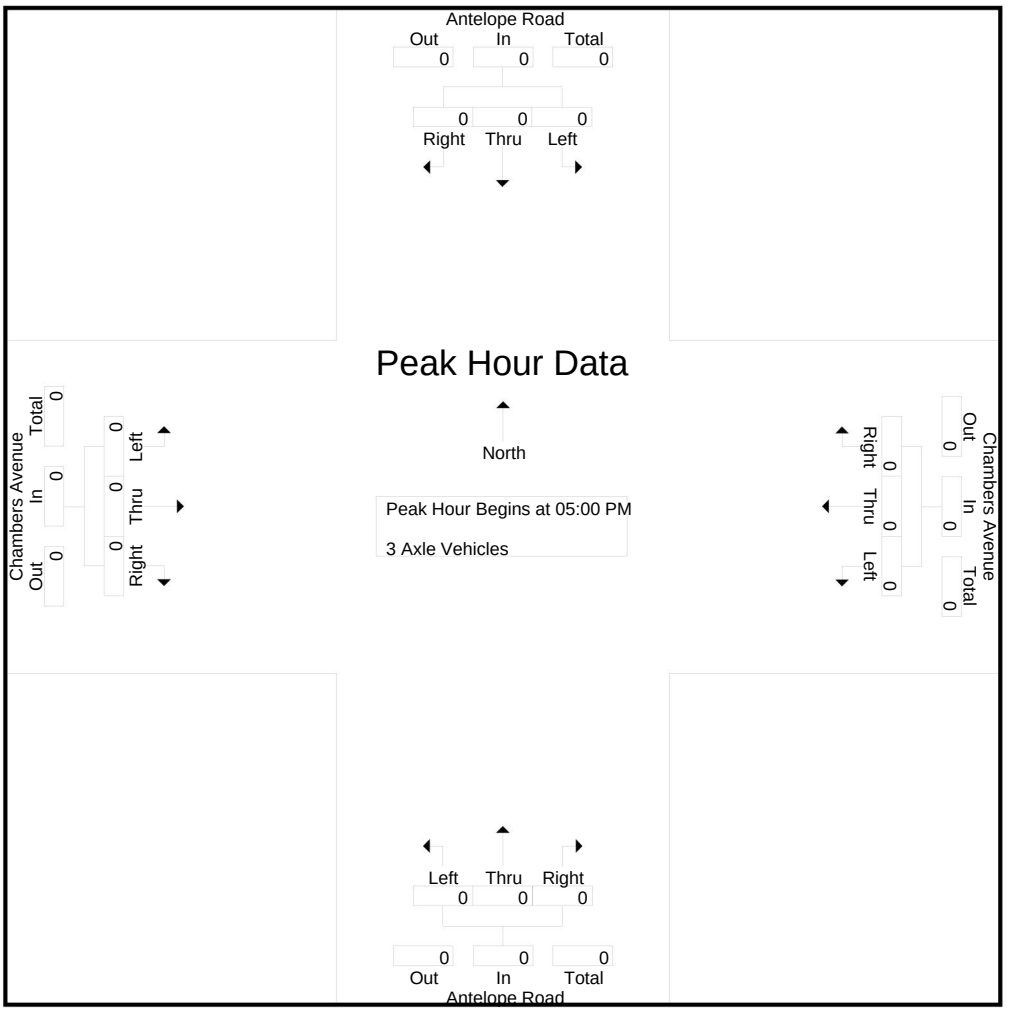
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

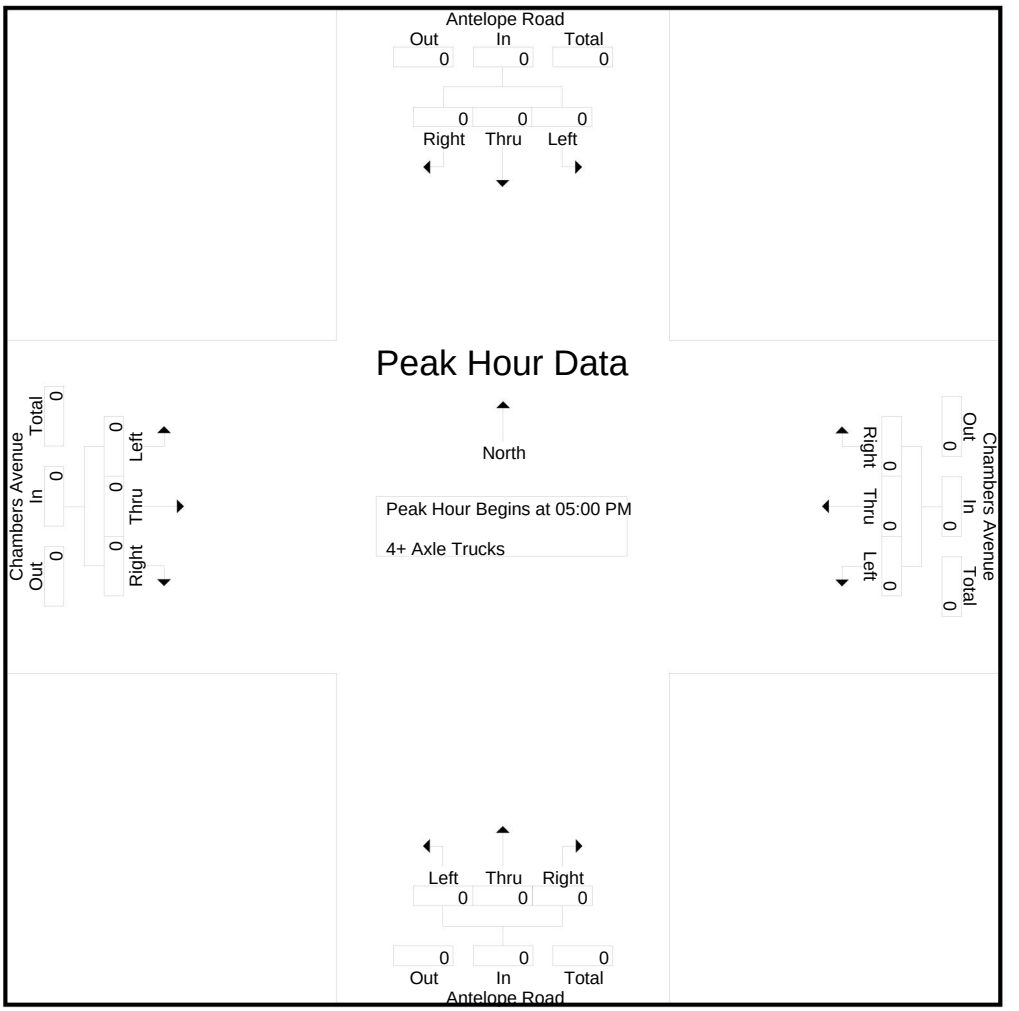
	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	

	Antelope Road Southbound				Chambers Avenue Westbound				Antelope Road Northbound				Chambers Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: Chambers Avenue
Weather: Clear

File Name : 03_MEN_Ant_Cham PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

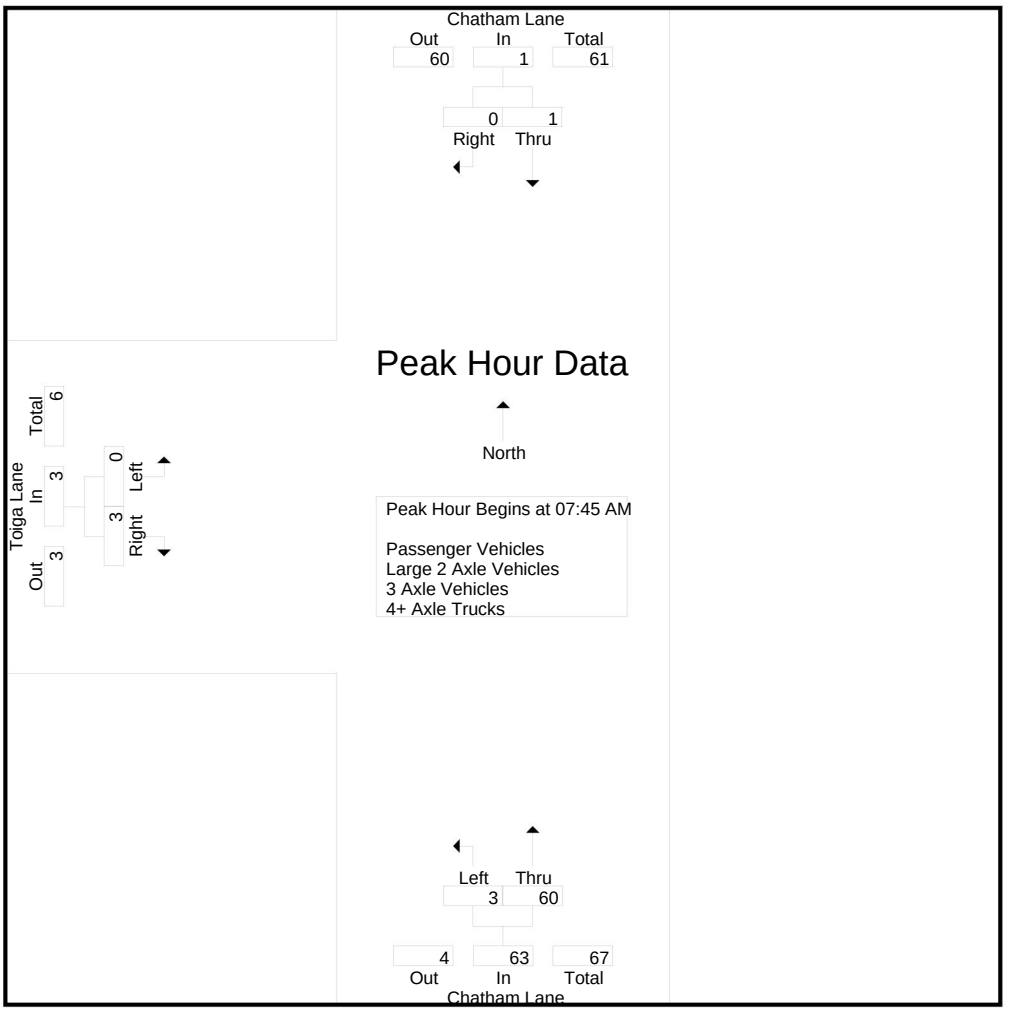
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	2	0	2	0	0	0	0	1	1	3
07:15 AM	4	0	4	0	1	1	1	0	1	6
07:30 AM	1	0	1	1	1	2	0	0	0	3
07:45 AM	1	0	1	1	10	11	0	1	1	13
Total	8	0	8	2	12	14	1	2	3	25
08:00 AM	0	0	0	1	14	15	0	0	0	15
08:15 AM	0	0	0	1	28	29	0	1	1	30
08:30 AM	0	0	0	0	8	8	0	1	1	9
08:45 AM	0	0	0	0	2	2	0	0	0	2
Total	0	0	0	2	52	54	0	2	2	56
Grand Total	8	0	8	4	64	68	1	4	5	81
Apprch %	100	0		5.9	94.1		20	80		
Total %	9.9	0	9.9	4.9	79	84	1.2	4.9	6.2	
Passenger Vehicles	7	0	7	4	64	68	1	4	5	80
% Passenger Vehicles	87.5	0	87.5	100	100	100	100	100	100	98.8
Large 2 Axle Vehicles	1	0	1	0	0	0	0	0	0	1
% Large 2 Axle Vehicles	12.5	0	12.5	0	0	0	0	0	0	1.2
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**1**	0	**1**	**1**	10	11	0	**1**	**1**	13
08:00 AM	0	0	0	1	14	15	0	0	0	15
08:15 AM	0	0	0	1	**28**	**29**	0	1	1	**30**
08:30 AM	0	0	0	0	8	8	0	1	1	9
Total Volume	1	0	1	3	60	63	0	3	3	67
% App. Total	100	0		4.8	95.2		0	100		
PHF	.250	.000	.250	.750	.536	.543	.000	.750	.750	.558

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:00 AM		
+0 mins.	2	0	2	**1**	10	11	0	**1**	**1**
+15 mins.	**4**	0	**4**	1	14	15	**1**	0	1
+30 mins.	1	0	1	1	**28**	**29**	0	0	0
+45 mins.	1	0	1	0	8	8	0	1	1
Total Volume	8	0	8	3	60	63	1	2	3
% App. Total	100	0		4.8	95.2		33.3	66.7	
PHF	.500	.000	.500	.750	.536	.543	.250	.500	.750

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles

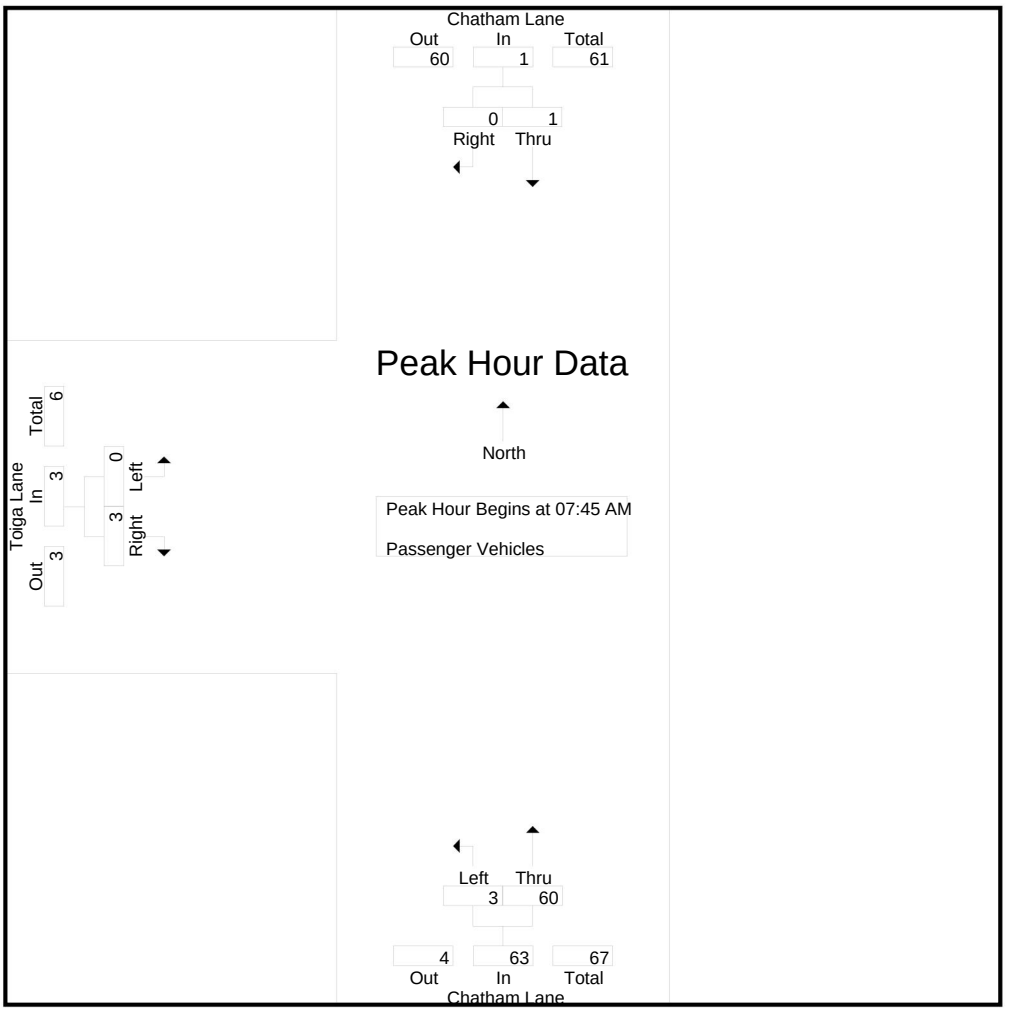
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	1	0	1	0	0	0	0	1	1	2
07:15 AM	4	0	4	0	1	1	1	0	1	6
07:30 AM	1	0	1	1	1	2	0	0	0	3
07:45 AM	1	0	1	1	10	11	0	1	1	13
Total	7	0	7	2	12	14	1	2	3	24
08:00 AM	0	0	0	1	14	15	0	0	0	15
08:15 AM	0	0	0	1	28	29	0	1	1	30
08:30 AM	0	0	0	0	8	8	0	1	1	9
08:45 AM	0	0	0	0	2	2	0	0	0	2
Total	0	0	0	2	52	54	0	2	2	56
Grand Total	7	0	7	4	64	68	1	4	5	80
Apprch %	100	0		5.9	94.1		20	80		
Total %	8.8	0	8.8	5	80	85	1.2	5	6.2	

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**1**	0	**1**	**1**	10	11	0	**1**	**1**	13
08:00 AM	0	0	0	1	14	15	0	0	0	15
08:15 AM	0	0	0	1	**28**	**29**	0	1	1	**30**
08:30 AM	0	0	0	0	8	8	0	1	1	9
Total Volume	1	0	1	3	60	63	0	3	3	67
% App. Total	100	0		4.8	95.2		0	100		
PHF	.250	.000	.250	.750	.536	.543	.000	.750	.750	.558

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	**1**	0	**1**	**1**	10	11	0	**1**	**1**
+15 mins.	0	0	0	1	14	15	0	0	0
+30 mins.	0	0	0	1	**28**	**29**	0	1	1
+45 mins.	0	0	0	0	8	8	0	1	1
Total Volume	1	0	1	3	60	63	0	3	3
% App. Total	100	0		4.8	95.2		0	100	
PHF	.250	.000	.250	.750	.536	.543	.000	.750	.750

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

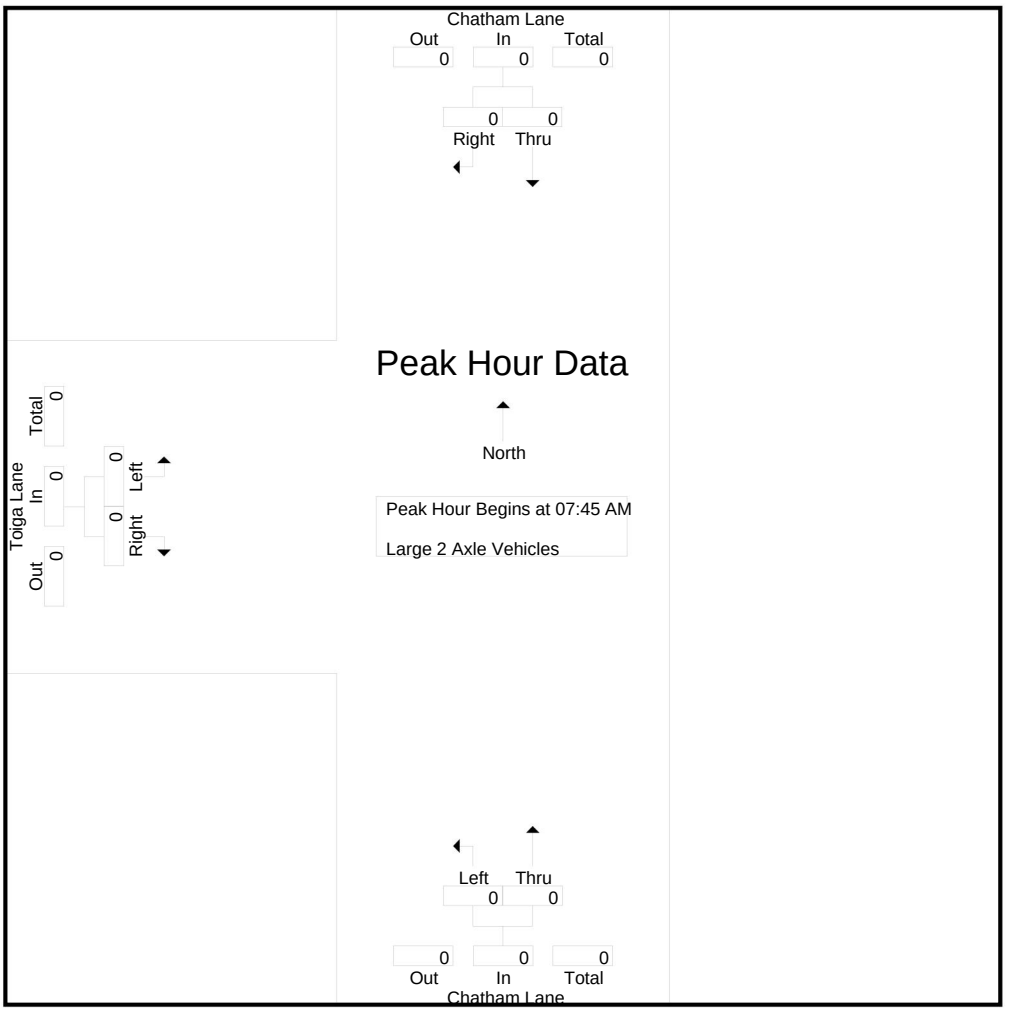
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	1	0	1	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	1	0	0	0	0	0	0	1
Apprch %	100	0		0	0		0	0		
Total %	100	0	100	0	0	0	0	0	0	

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- 3 Axle Vehicles

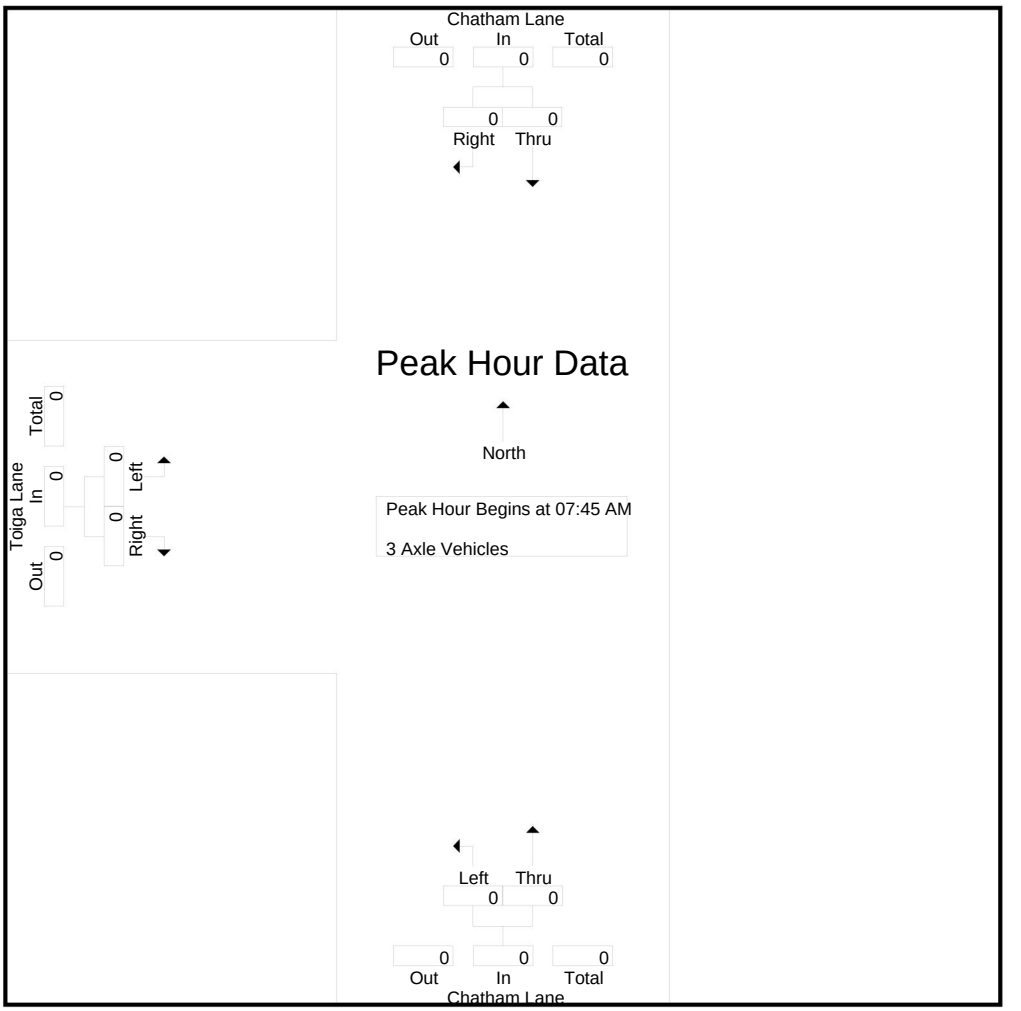
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

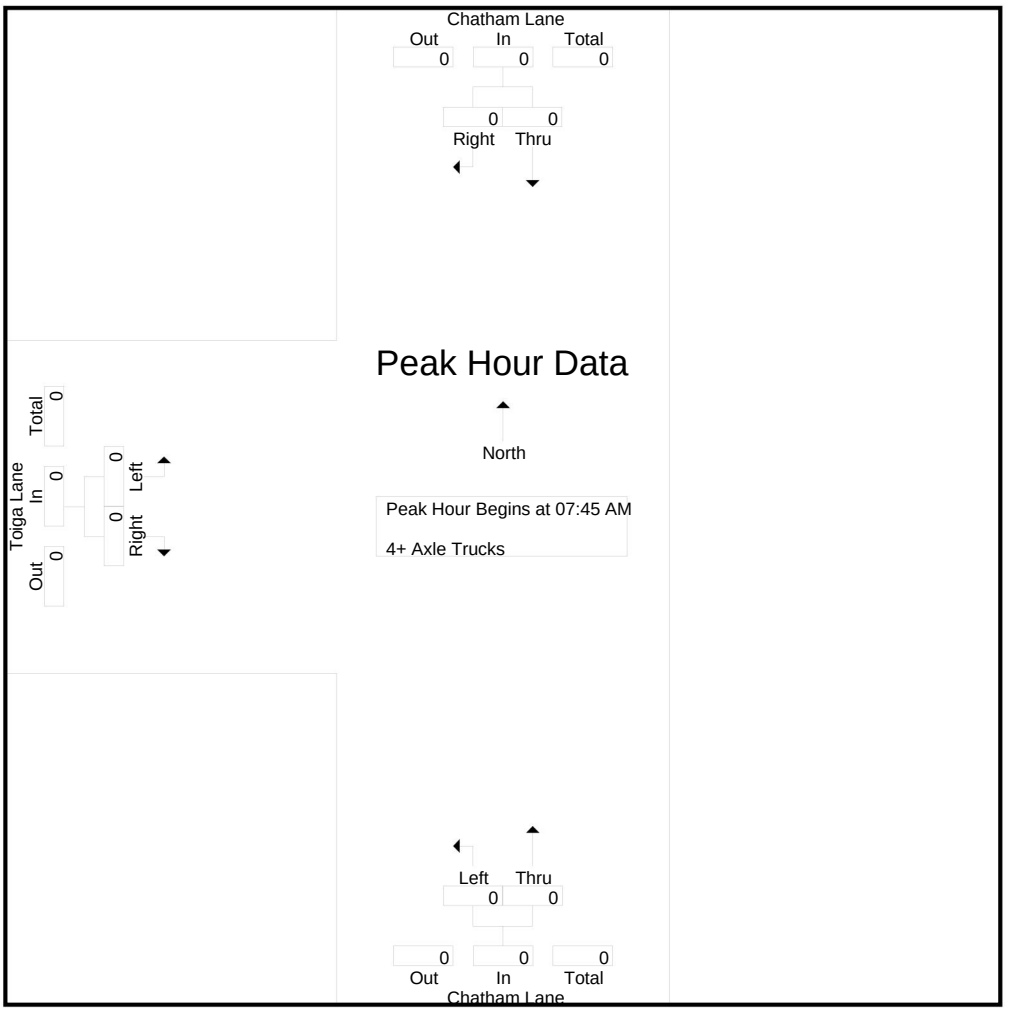
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi AM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			07:45 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

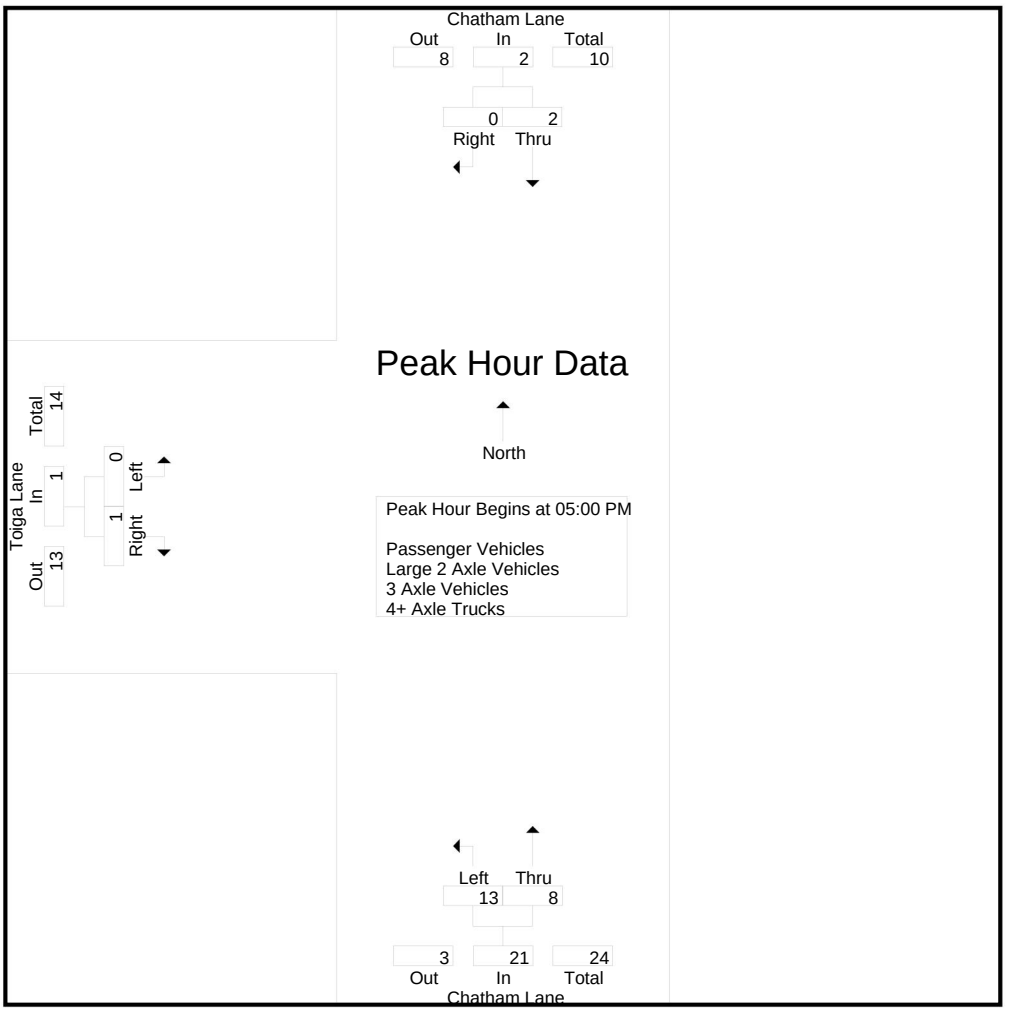
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	1	1	2	1	1	2	0	1	1	5
04:30 PM	0	0	0	2	1	3	0	0	0	3
04:45 PM	2	0	2	1	0	1	0	0	0	3
Total	3	1	4	4	2	6	0	1	1	11
05:00 PM	0	0	0	4	2	6	0	1	1	7
05:15 PM	0	0	0	2	1	3	0	0	0	3
05:30 PM	1	0	1	4	4	8	0	0	0	9
05:45 PM	1	0	1	3	1	4	0	0	0	5
Total	2	0	2	13	8	21	0	1	1	24
Grand Total	5	1	6	17	10	27	0	2	2	35
Apprch %	83.3	16.7		63	37		0	100		
Total %	14.3	2.9	17.1	48.6	28.6	77.1	0	5.7	5.7	
Passenger Vehicles	5	1	6	16	10	26	0	2	2	34
% Passenger Vehicles	100	100	100	94.1	100	96.3	0	100	100	97.1
Large 2 Axle Vehicles	0	0	0	1	0	1	0	0	0	1
% Large 2 Axle Vehicles	0	0	0	5.9	0	3.7	0	0	0	2.9
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	**4**	2	6	0	**1**	**1**	7
05:15 PM	0	0	0	2	1	3	0	0	0	3
05:30 PM	**1**	0	**1**	4	**4**	**8**	0	0	0	**9**
05:45 PM	1	0	1	3	1	4	0	0	0	5
Total Volume	2	0	2	13	8	21	0	1	1	24
% App. Total	100	0		61.9	38.1		0	100		
PHF	.500	.000	.500	.813	.500	.656	.000	.250	.250	.667

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			05:00 PM			04:15 PM		
+0 mins.	0	0	0	**4**	2	6	0	**1**	**1**
+15 mins.	1	**1**	**2**	2	1	3	0	0	0
+30 mins.	0	0	0	4	**4**	**8**	0	0	0
+45 mins.	**2**	0	2	3	1	4	0	1	1
Total Volume	3	1	4	13	8	21	0	2	2
% App. Total	75	25		61.9	38.1		0	100	
PHF	.375	.250	.500	.813	.500	.656	.000	.500	.500

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- Passenger Vehicles

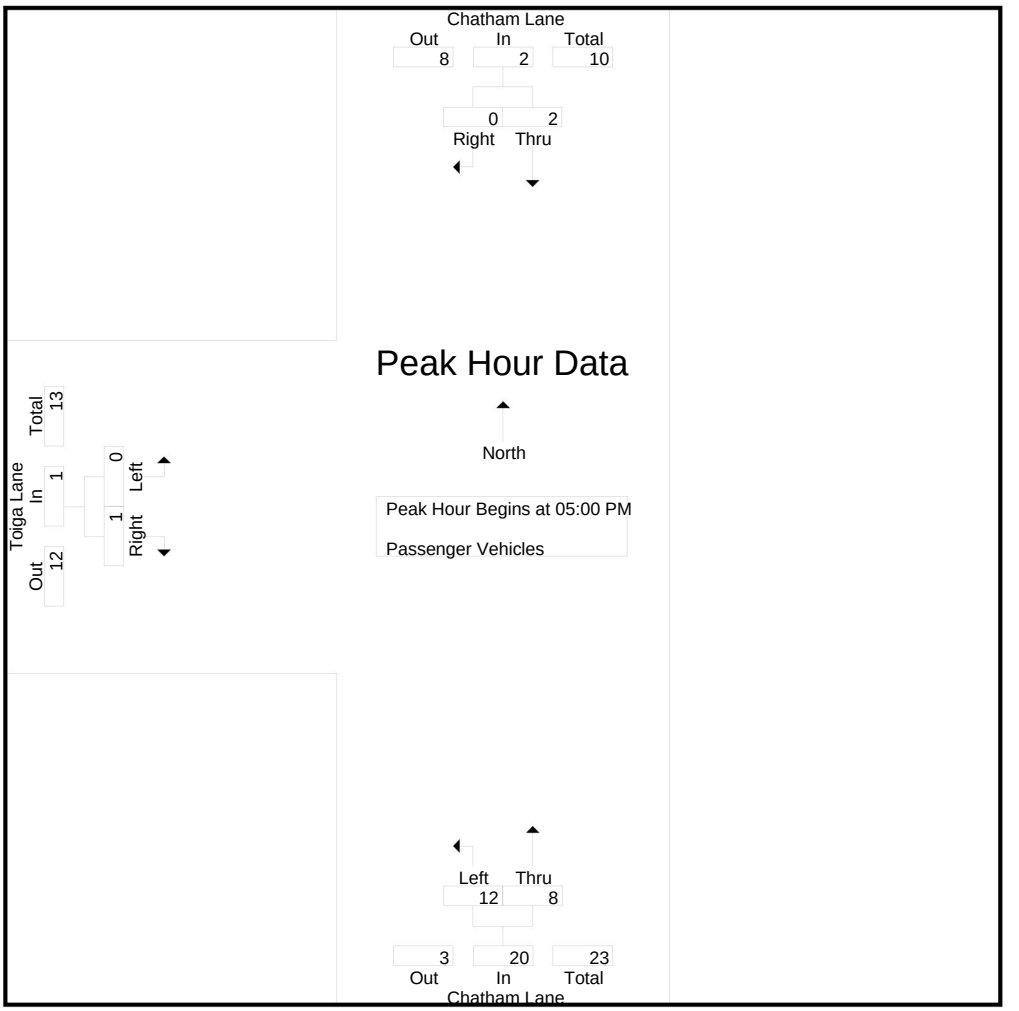
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	1	1	2	1	1	2	0	1	1	5
04:30 PM	0	0	0	2	1	3	0	0	0	3
04:45 PM	2	0	2	1	0	1	0	0	0	3
Total	3	1	4	4	2	6	0	1	1	11
05:00 PM	0	0	0	4	2	6	0	1	1	7
05:15 PM	0	0	0	2	1	3	0	0	0	3
05:30 PM	1	0	1	4	4	8	0	0	0	9
05:45 PM	1	0	1	2	1	3	0	0	0	4
Total	2	0	2	12	8	20	0	1	1	23
Grand Total	5	1	6	16	10	26	0	2	2	34
Apprch %	83.3	16.7		61.5	38.5		0	100		
Total %	14.7	2.9	17.6	47.1	29.4	76.5	0	5.9	5.9	

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	**4**	2	6	0	**1**	**1**	7
05:15 PM	0	0	0	2	1	3	0	0	0	3
05:30 PM	**1**	0	**1**	4	**4**	**8**	0	0	0	**9**
05:45 PM	1	0	1	2	1	3	0	0	0	4
Total Volume	2	0	2	12	8	20	0	1	1	23
% App. Total	100	0		60	40		0	100		
PHF	.500	.000	.500	.750	.500	.625	.000	.250	.250	.639

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City of Menifee
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E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	**4**	2	6	0	**1**	**1**
+15 mins.	0	0	0	2	1	3	0	0	0
+30 mins.	**1**	0	**1**	4	**4**	**8**	0	0	0
+45 mins.	1	0	1	2	1	3	0	0	0
Total Volume	2	0	2	12	8	20	0	1	1
% App. Total	100	0		60	40		0	100	
PHF	.500	.000	.500	.750	.500	.625	.000	.250	.250

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

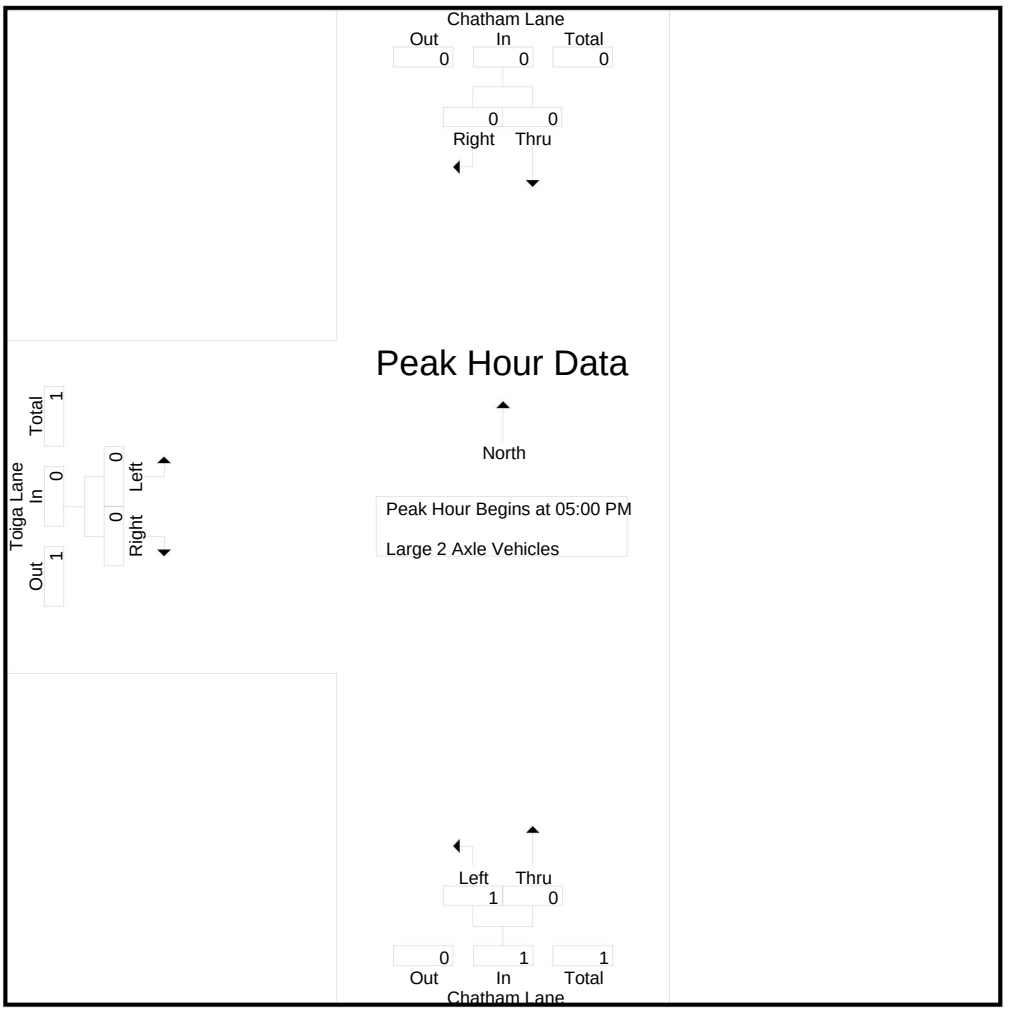
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	1	0	1	0	0	0	1
Grand Total	0	0	0	1	0	1	0	0	0	1
Apprch %	0	0		100	0		0	0		
Total %	0	0	0	100	0	100	0	0	0	

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	**1**	0	**1**	0	0	0	**1**
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

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City of Menifee
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E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	**1**	0	**1**	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- 3 Axle Vehicles

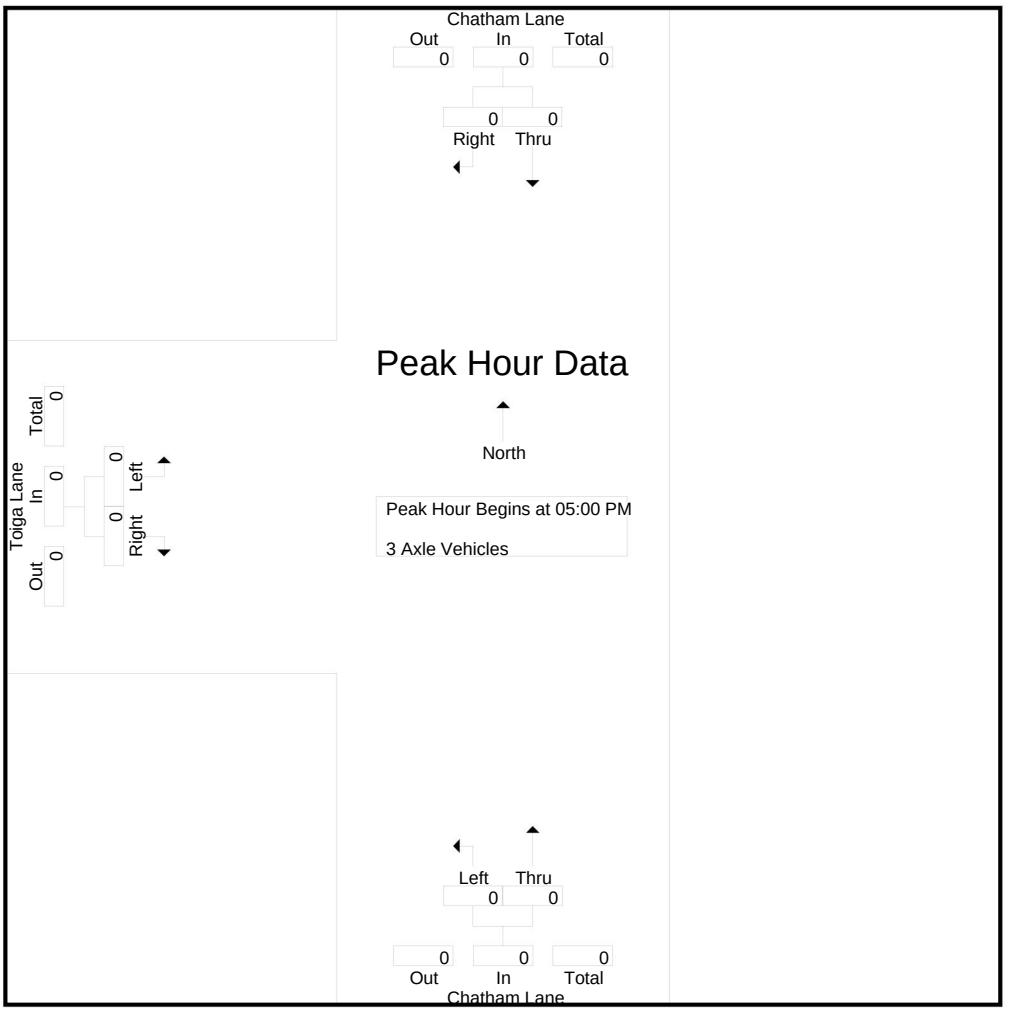
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
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Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

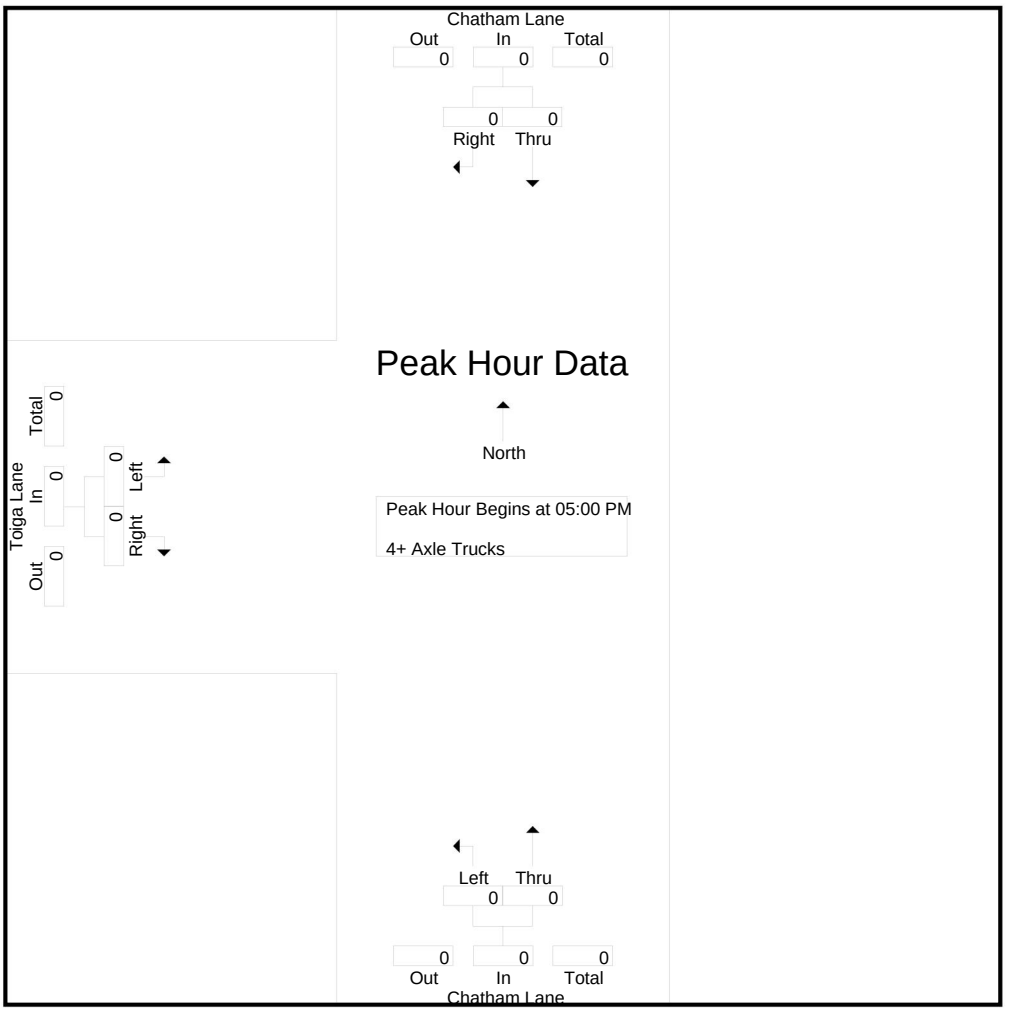
	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Chatham Lane Southbound			Chatham Lane Northbound			Toiga Lane Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
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E/W: Toiga Lane
Weather: Clear

File Name : 04_MEN_Chat_Toi PM
Site Code : 99925111
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Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

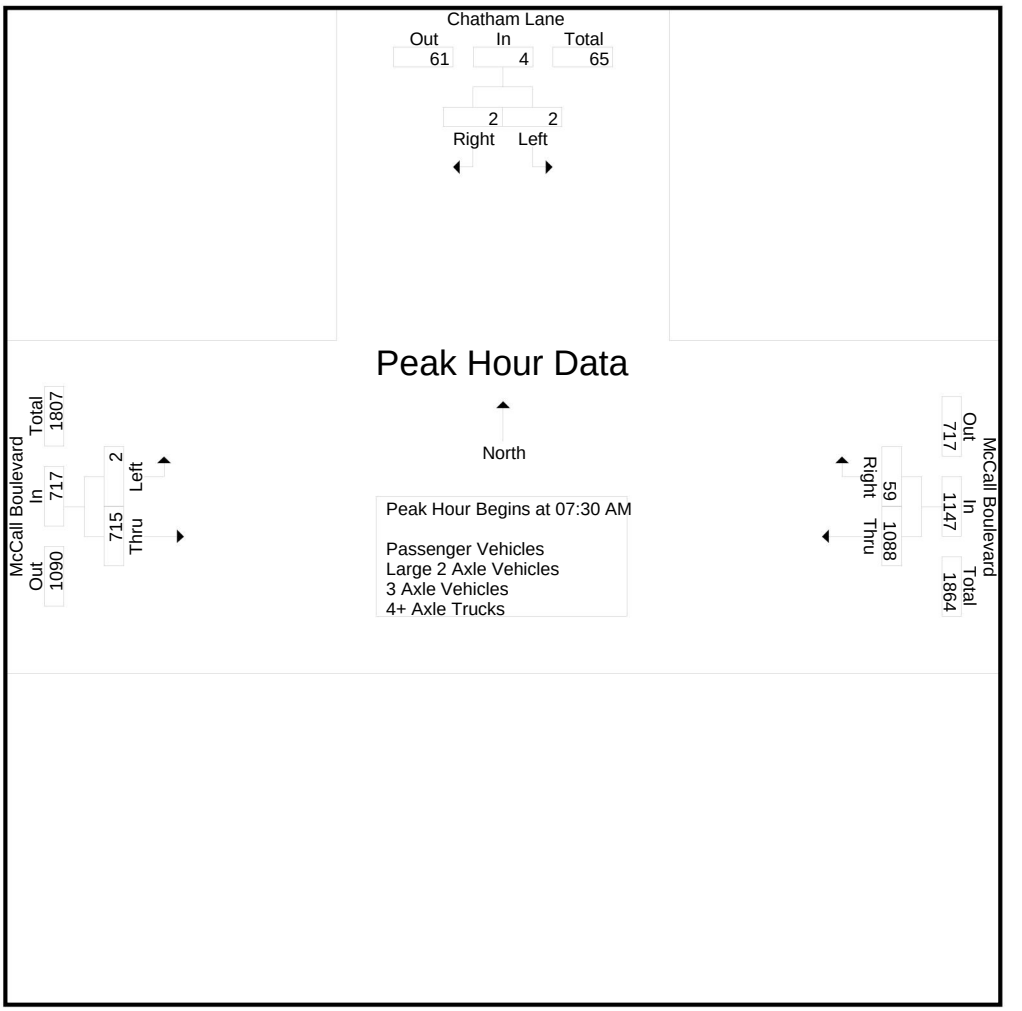
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	1	2	3	192	0	192	0	142	142	337
07:15 AM	1	3	4	216	1	217	0	176	176	397
07:30 AM	0	1	1	258	1	259	1	181	182	442
07:45 AM	1	1	2	294	12	306	0	201	201	509
Total	3	7	10	960	14	974	1	700	701	1685
08:00 AM	0	0	0	305	14	319	0	170	170	489
08:15 AM	1	0	1	231	32	263	1	163	164	428
08:30 AM	1	0	1	198	4	202	0	143	143	346
08:45 AM	0	0	0	182	1	183	1	100	101	284
Total	2	0	2	916	51	967	2	576	578	1547
Grand Total	5	7	12	1876	65	1941	3	1276	1279	3232
Apprch %	41.7	58.3		96.7	3.3		0.2	99.8		
Total %	0.2	0.2	0.4	58	2	60.1	0.1	39.5	39.6	
Passenger Vehicles	5	6	11	1847	65	1912	3	1254	1257	3180
% Passenger Vehicles	100	85.7	91.7	98.5	100	98.5	100	98.3	98.3	98.4
Large 2 Axle Vehicles	0	1	1	21	0	21	0	15	15	37
% Large 2 Axle Vehicles	0	14.3	8.3	1.1	0	1.1	0	1.2	1.2	1.1
3 Axle Vehicles	0	0	0	5	0	5	0	1	1	6
% 3 Axle Vehicles	0	0	0	0.3	0	0.3	0	0.1	0.1	0.2
4+ Axle Trucks	0	0	0	3	0	3	0	6	6	9
% 4+ Axle Trucks	0	0	0	0.2	0	0.2	0	0.5	0.5	0.3

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	**1**	1	258	1	259	**1**	181	182	442
07:45 AM	**1**	1	**2**	294	12	306	0	**201**	**201**	**509**
08:00 AM	0	0	0	**305**	14	**319**	0	170	170	489
08:15 AM	1	0	1	231	**32**	263	1	163	164	428
Total Volume	2	2	4	1088	59	1147	2	715	717	1868
% App. Total	50	50		94.9	5.1		0.3	99.7		
PHF	.500	.500	.500	.892	.461	.899	.500	.889	.892	.917

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City of Menifee
N/S: Chatham Lane
E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC AM
Site Code : 99925111
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:15 AM		
+0 mins.	**1**	2	3	258	1	259	0	176	176
+15 mins.	1	**3**	**4**	294	12	306	**1**	181	182
+30 mins.	0	1	1	**305**	14	**319**	0	**201**	**201**
+45 mins.	1	1	2	231	**32**	263	0	170	170
Total Volume	3	7	10	1088	59	1147	1	728	729
% App. Total	30	70		94.9	5.1		0.1	99.9	
PHF	.750	.583	.625	.892	.461	.899	.250	.905	.907

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City of Menifee
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Weather: Clear

File Name : 07_MEN_Chat_McC AM
Site Code : 99925111
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Groups Printed- Passenger Vehicles

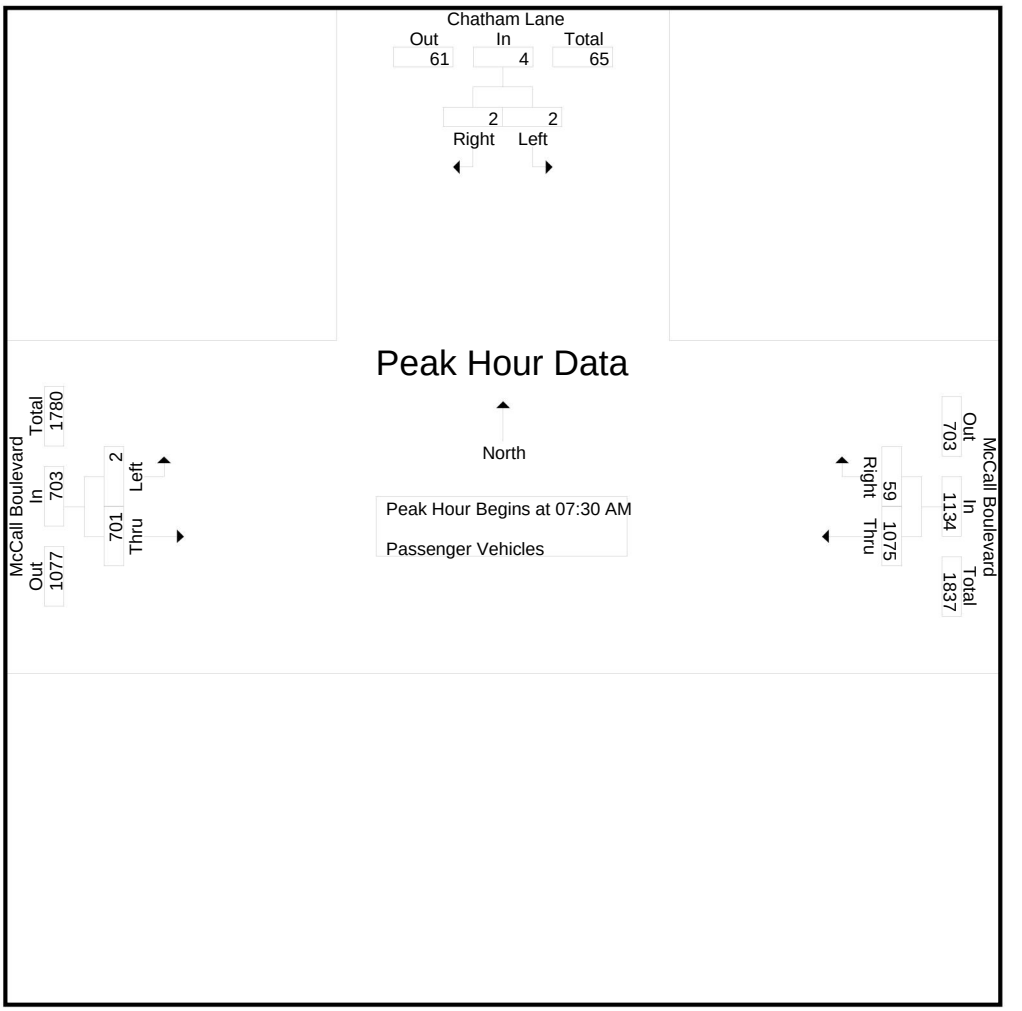
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	1	1	2	185	0	185	0	140	140	327
07:15 AM	1	3	4	215	1	216	0	174	174	394
07:30 AM	0	1	1	257	1	258	1	177	178	437
07:45 AM	1	1	2	291	12	303	0	196	196	501
Total	3	6	9	948	14	962	1	687	688	1659
08:00 AM	0	0	0	302	14	316	0	166	166	482
08:15 AM	1	0	1	225	32	257	1	162	163	421
08:30 AM	1	0	1	193	4	197	0	141	141	339
08:45 AM	0	0	0	179	1	180	1	98	99	279
Total	2	0	2	899	51	950	2	567	569	1521
Grand Total	5	6	11	1847	65	1912	3	1254	1257	3180
Apprch %	45.5	54.5		96.6	3.4		0.2	99.8		
Total %	0.2	0.2	0.3	58.1	2	60.1	0.1	39.4	39.5	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	**1**	1	257	1	258	**1**	177	178	437
07:45 AM	**1**	1	**2**	291	12	303	0	**196**	**196**	**501**
08:00 AM	0	0	0	**302**	14	**316**	0	166	166	482
08:15 AM	1	0	1	225	**32**	257	1	162	163	421
Total Volume	2	2	4	1075	59	1134	2	701	703	1841
% App. Total	50	50		94.8	5.2		0.3	99.7		
PHF	.500	.500	.500	.890	.461	.897	.500	.894	.897	.919

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File Name : 07_MEN_Chat_McC AM
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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	**1**	1	257	1	258	**1**	177	178
+15 mins.	**1**	1	**2**	291	12	303	0	**196**	**196**
+30 mins.	0	0	0	**302**	14	**316**	0	166	166
+45 mins.	1	0	1	225	**32**	257	1	162	163
Total Volume	2	2	4	1075	59	1134	2	701	703
% App. Total	50	50		94.8	5.2		0.3	99.7	
PHF	.500	.500	.500	.890	.461	.897	.500	.894	.897

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City of Menifee
N/S: Chatham Lane
E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC AM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- Large 2 Axle Vehicles

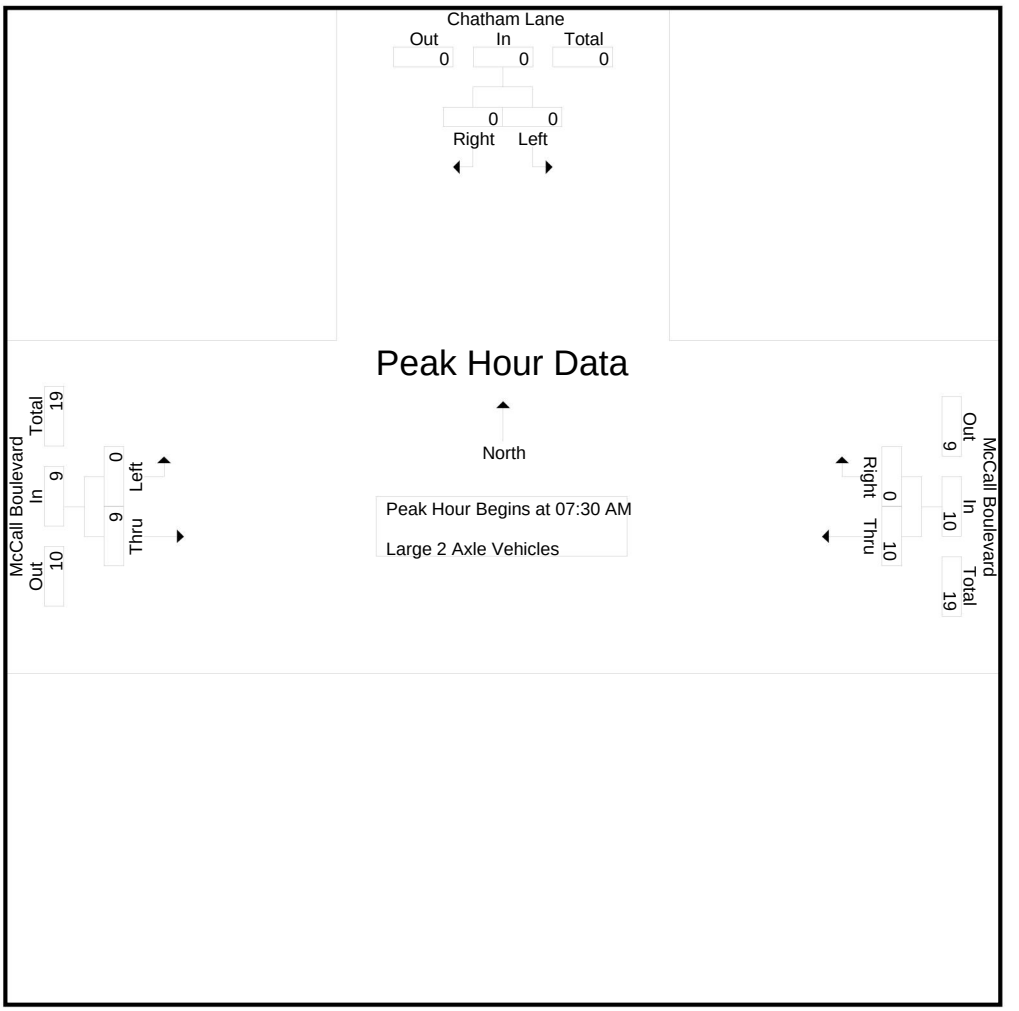
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	1	1	5	0	5	0	2	2	8
07:15 AM	0	0	0	0	0	0	0	1	1	1
07:30 AM	0	0	0	1	0	1	0	2	2	3
07:45 AM	0	0	0	1	0	1	0	4	4	5
Total	0	1	1	7	0	7	0	9	9	17
08:00 AM	0	0	0	2	0	2	0	3	3	5
08:15 AM	0	0	0	6	0	6	0	0	0	6
08:30 AM	0	0	0	3	0	3	0	1	1	4
08:45 AM	0	0	0	3	0	3	0	2	2	5
Total	0	0	0	14	0	14	0	6	6	20
Grand Total	0	1	1	21	0	21	0	15	15	37
Apprch %	0	100		100	0		0	100		
Total %	0	2.7	2.7	56.8	0	56.8	0	40.5	40.5	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	1	0	1	0	2	2	3
07:45 AM	0	0	0	1	0	1	0	**4**	**4**	5
08:00 AM	0	0	0	2	0	2	0	3	3	5
08:15 AM	0	0	0	**6**	0	**6**	0	0	0	**6**
Total Volume	0	0	0	10	0	10	0	9	9	19
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.417	.000	.417	.000	.563	.563	.792

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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	0	0	1	0	1	0	2	2
+15 mins.	0	0	0	1	0	1	0	**4**	**4**
+30 mins.	0	0	0	2	0	2	0	3	3
+45 mins.	0	0	0	**6**	0	**6**	0	0	0
Total Volume	0	0	0	10	0	10	0	9	9
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.417	.000	.417	.000	.563	.563

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City of Menifee
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File Name : 07_MEN_Chat_McC AM
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Groups Printed- 3 Axle Vehicles

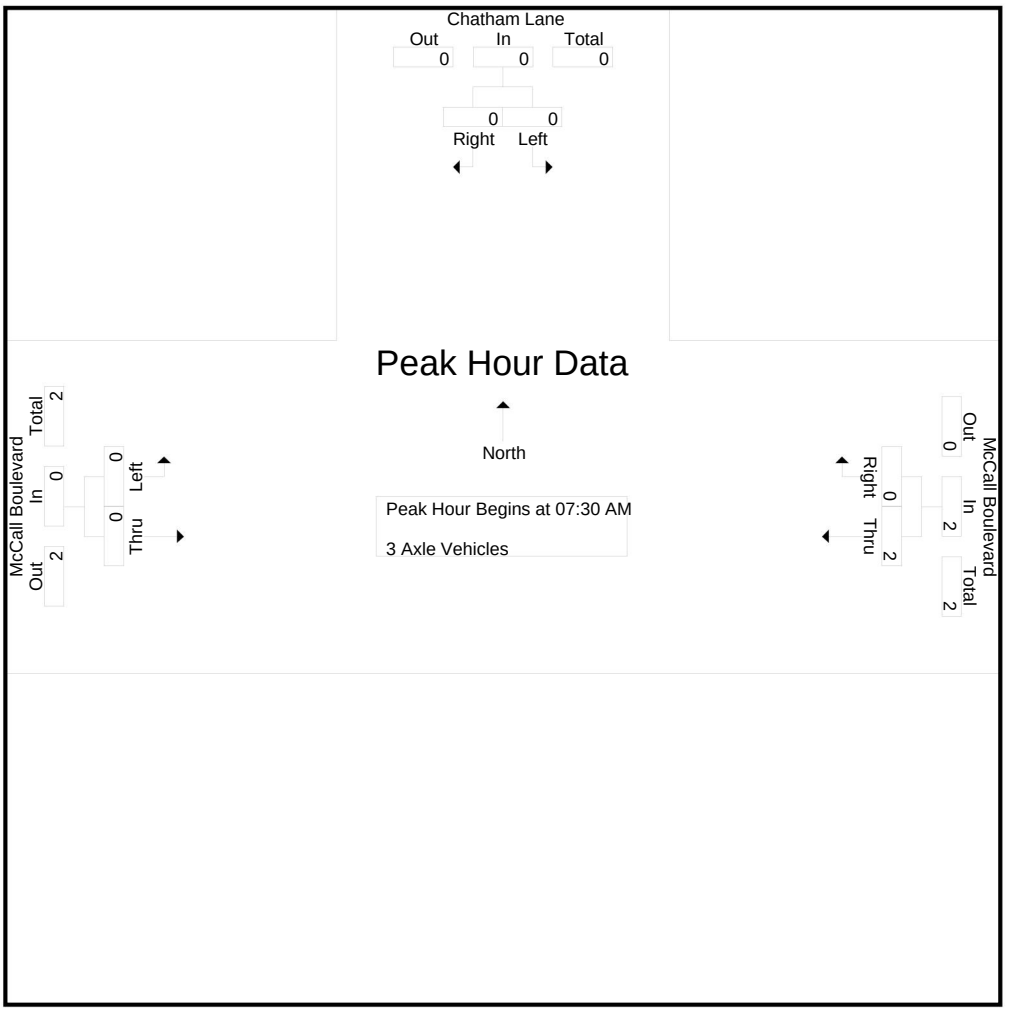
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	1	0	1	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	1	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	2	0	2	0	1	1	3
08:00 AM	0	0	0	1	0	1	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	2	0	2	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	3	0	0	0	3
Grand Total	0	0	0	5	0	5	0	1	1	6
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	83.3	0	83.3	0	16.7	16.7	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	**1**	0	**1**	0	0	0	**1**
08:00 AM	0	0	0	1	0	1	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	0	0	2
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.500	.000	.500	.000	.000	.000	.500

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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	**1**	0	**1**	0	0	0
+30 mins.	0	0	0	1	0	1	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.500	.000	.500	.000	.000	.000

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N/S: Chatham Lane
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File Name : 07_MEN_Chat_McC AM
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Groups Printed- 4+ Axle Trucks

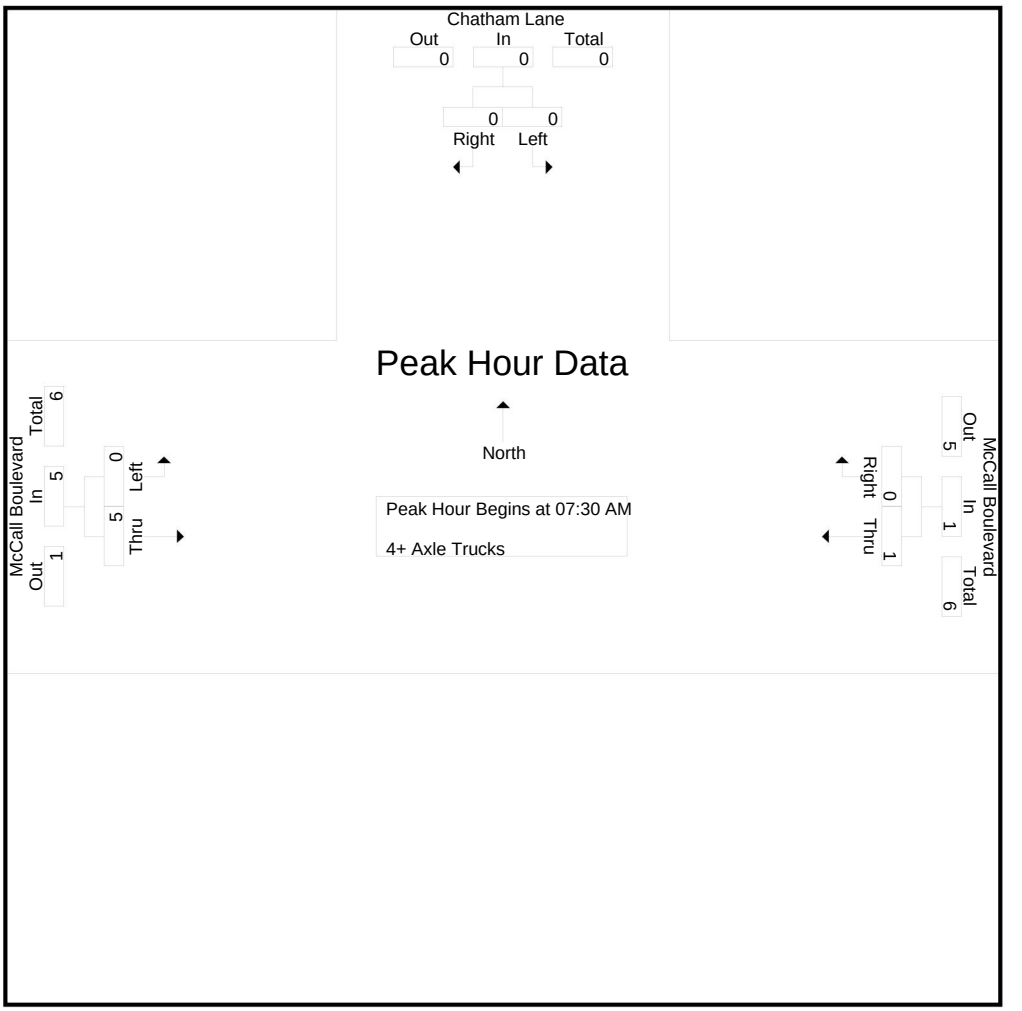
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	1	0	1	0	0	0	1
07:15 AM	0	0	0	1	0	1	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	2	2	2
07:45 AM	0	0	0	1	0	1	0	1	1	2
Total	0	0	0	3	0	3	0	3	3	6
08:00 AM	0	0	0	0	0	0	0	1	1	1
08:15 AM	0	0	0	0	0	0	0	1	1	1
08:30 AM	0	0	0	0	0	0	0	1	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	3	3	3
Grand Total	0	0	0	3	0	3	0	6	6	9
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	33.3	0	33.3	0	66.7	66.7	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	0	0	0	0	**2**	**2**	**2**
07:45 AM	0	0	0	**1**	0	**1**	0	1	1	2
08:00 AM	0	0	0	0	0	0	0	1	1	1
08:15 AM	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	1	0	1	0	5	5	6
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.250	.000	.250	.000	.625	.625	.750

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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	0	0	0	0	0	0	**2**	**2**
+15 mins.	0	0	0	**1**	0	**1**	0	1	1
+30 mins.	0	0	0	0	0	0	0	1	1
+45 mins.	0	0	0	0	0	0	0	1	1
Total Volume	0	0	0	1	0	1	0	5	5
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.250	.000	.250	.000	.625	.625

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City of Menifee
N/S: Chatham Lane
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Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

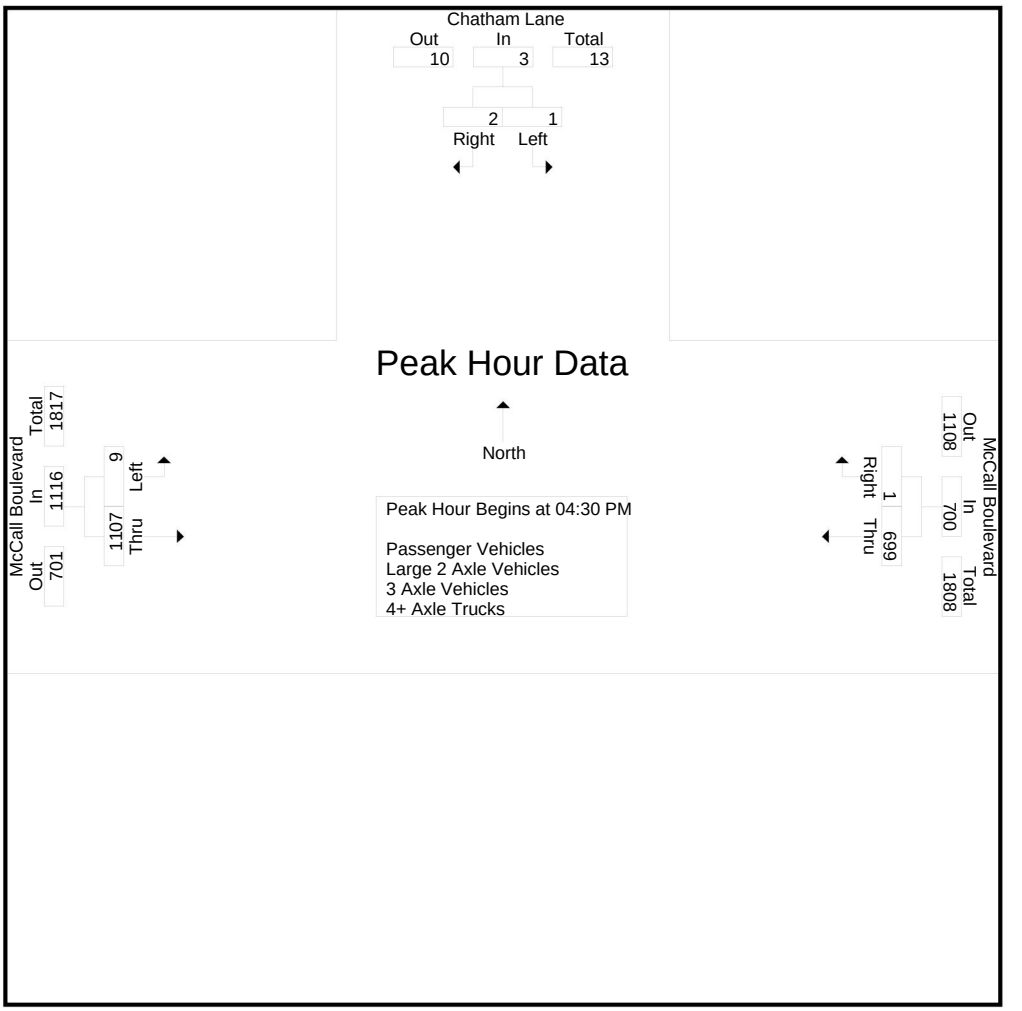
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	182	0	182	0	257	257	439
04:15 PM	0	2	2	161	2	163	2	260	262	427
04:30 PM	0	0	0	181	1	182	1	287	288	470
04:45 PM	1	1	2	169	0	169	1	262	263	434
Total	1	3	4	693	3	696	4	1066	1070	1770
05:00 PM	0	1	1	180	0	180	4	267	271	452
05:15 PM	0	0	0	169	0	169	3	291	294	463
05:30 PM	0	0	0	189	2	191	6	247	253	444
05:45 PM	1	1	2	163	0	163	4	228	232	397
Total	1	2	3	701	2	703	17	1033	1050	1756
Grand Total	2	5	7	1394	5	1399	21	2099	2120	3526
Apprch %	28.6	71.4		99.6	0.4		1	99		
Total %	0.1	0.1	0.2	39.5	0.1	39.7	0.6	59.5	60.1	
Passenger Vehicles	2	5	7	1385	5	1390	21	2087	2108	3505
% Passenger Vehicles	100	100	100	99.4	100	99.4	100	99.4	99.4	99.4
Large 2 Axle Vehicles	0	0	0	6	0	6	0	9	9	15
% Large 2 Axle Vehicles	0	0	0	0.4	0	0.4	0	0.4	0.4	0.4
3 Axle Vehicles	0	0	0	2	0	2	0	0	0	2
% 3 Axle Vehicles	0	0	0	0.1	0	0.1	0	0	0	0.1
4+ Axle Trucks	0	0	0	1	0	1	0	3	3	4
% 4+ Axle Trucks	0	0	0	0.1	0	0.1	0	0.1	0.1	0.1

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	**181**	**1**	**182**	1	287	288	**470**
04:45 PM	**1**	**1**	**2**	169	0	169	1	262	263	434
05:00 PM	0	1	1	180	0	180	**4**	267	271	452
05:15 PM	0	0	0	169	0	169	3	**291**	**294**	463
Total Volume	1	2	3	699	1	700	9	1107	1116	1819
% App. Total	33.3	66.7		99.9	0.1		0.8	99.2		
PHF	.250	.500	.375	.965	.250	.962	.563	.951	.949	.968

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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:45 PM			04:30 PM		
+0 mins.	0	**2**	**2**	169	0	169	1	287	288
+15 mins.	0	0	0	180	0	180	1	262	263
+30 mins.	**1**	1	2	169	0	169	**4**	267	271
+45 mins.	0	1	1	**189**	**2**	**191**	3	**291**	**294**
Total Volume	1	4	5	707	2	709	9	1107	1116
% App. Total	20	80		99.7	0.3		0.8	99.2	
PHF	.250	.500	.625	.935	.250	.928	.563	.951	.949

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File Name : 07_MEN_Chat_McC PM
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Groups Printed- Passenger Vehicles

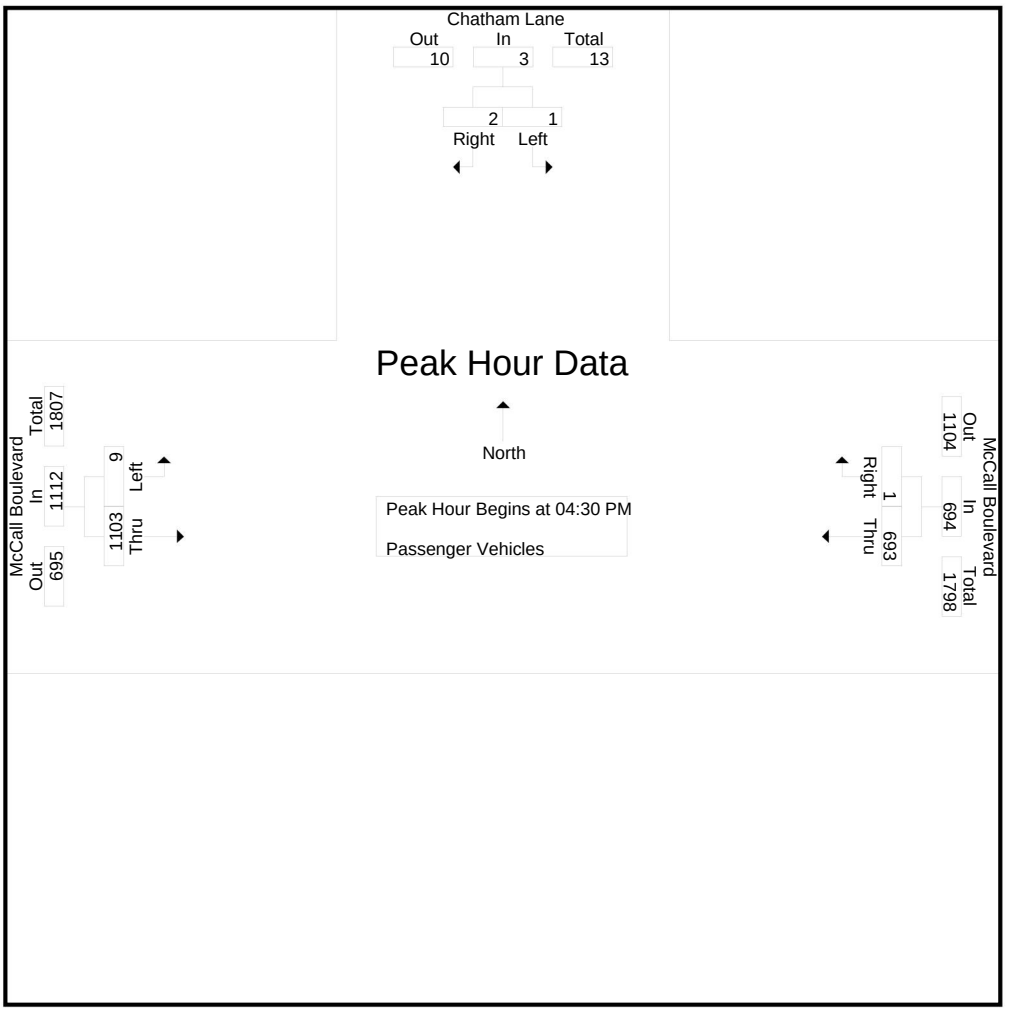
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	181	0	181	0	256	256	437
04:15 PM	0	2	2	160	2	162	2	255	257	421
04:30 PM	0	0	0	180	1	181	1	284	285	466
04:45 PM	1	1	2	169	0	169	1	261	262	433
Total	1	3	4	690	3	693	4	1056	1060	1757
05:00 PM	0	1	1	176	0	176	4	267	271	448
05:15 PM	0	0	0	168	0	168	3	291	294	462
05:30 PM	0	0	0	189	2	191	6	246	252	443
05:45 PM	1	1	2	162	0	162	4	227	231	395
Total	1	2	3	695	2	697	17	1031	1048	1748
Grand Total	2	5	7	1385	5	1390	21	2087	2108	3505
Apprch %	28.6	71.4		99.6	0.4		1	99		
Total %	0.1	0.1	0.2	39.5	0.1	39.7	0.6	59.5	60.1	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	**180**	**1**	**181**	1	284	285	**466**
04:45 PM	**1**	**1**	**2**	169	0	169	1	261	262	433
05:00 PM	0	1	1	176	0	176	**4**	267	271	448
05:15 PM	0	0	0	168	0	168	3	**291**	**294**	462
Total Volume	1	2	3	693	1	694	9	1103	1112	1809
% App. Total	33.3	66.7		99.9	0.1		0.8	99.2		
PHF	.250	.500	.375	.963	.250	.959	.563	.948	.946	.970

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City of Menifee
N/S: Chatham Lane
E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	**180**	**1**	**181**	1	284	285
+15 mins.	**1**	**1**	**2**	169	0	169	1	261	262
+30 mins.	0	1	1	176	0	176	**4**	267	271
+45 mins.	0	0	0	168	0	168	3	**291**	**294**
Total Volume	1	2	3	693	1	694	9	1103	1112
% App. Total	33.3	66.7		99.9	0.1		0.8	99.2	
PHF	.250	.500	.375	.963	.250	.959	.563	.948	.946

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City of Menifee
N/S: Chatham Lane
E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

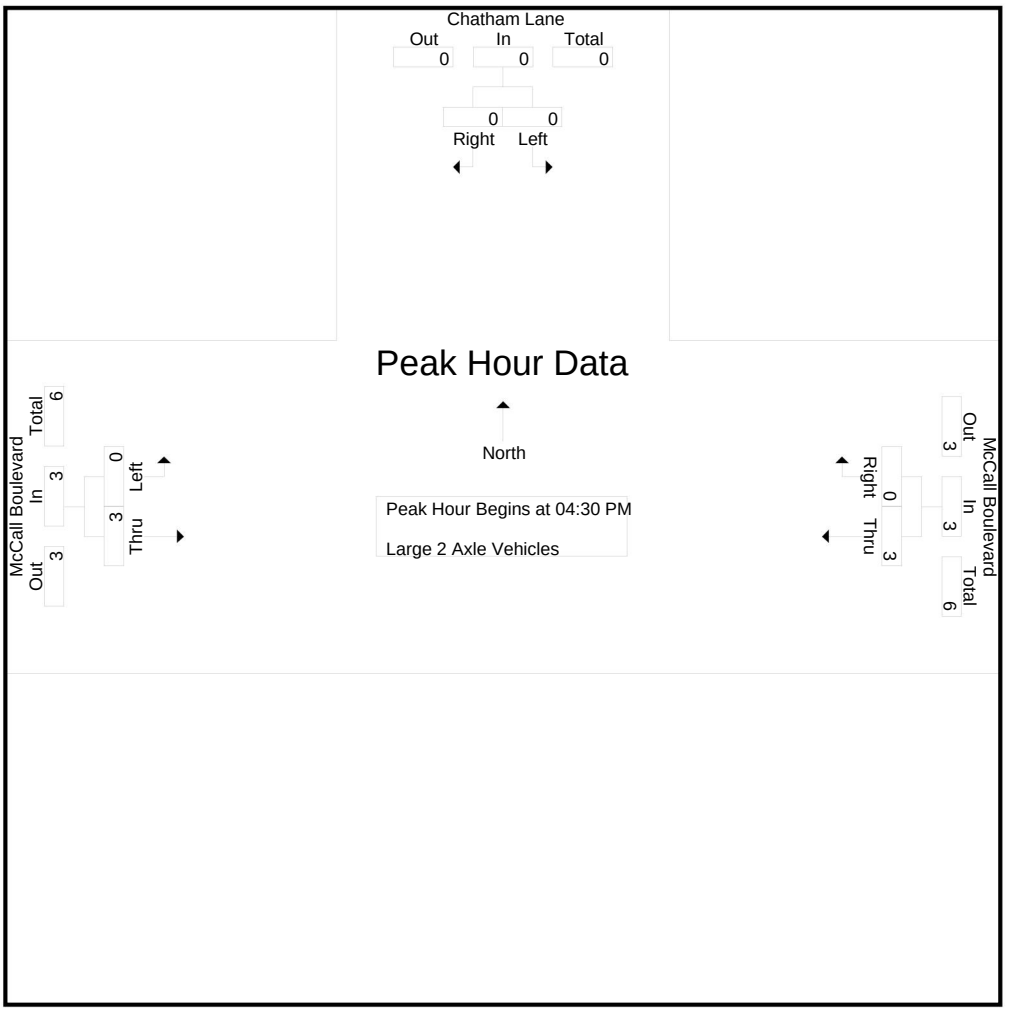
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	1	0	1	0	1	1	2
04:15 PM	0	0	0	1	0	1	0	4	4	5
04:30 PM	0	0	0	1	0	1	0	2	2	3
04:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	3	0	3	0	8	8	11
05:00 PM	0	0	0	2	0	2	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	1	1	1
05:45 PM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	3	0	3	0	1	1	4
Grand Total	0	0	0	6	0	6	0	9	9	15
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	40	0	40	0	60	60	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	1	0	1	0	**2**	**2**	**3**
04:45 PM	0	0	0	0	0	0	0	1	1	1
05:00 PM	0	0	0	**2**	0	**2**	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	3	0	3	0	3	3	6
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.375	.000	.375	.000	.375	.375	.500

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City of Menifee
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E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	1	0	1	0	**2**	**2**
+15 mins.	0	0	0	0	0	0	0	1	1
+30 mins.	0	0	0	**2**	0	**2**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	3	0	3	0	3	3
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.375	.000	.375	.000	.375	.375

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City of Menifee
N/S: Chatham Lane
E/W: McCall Boulevard
Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- 3 Axle Vehicles

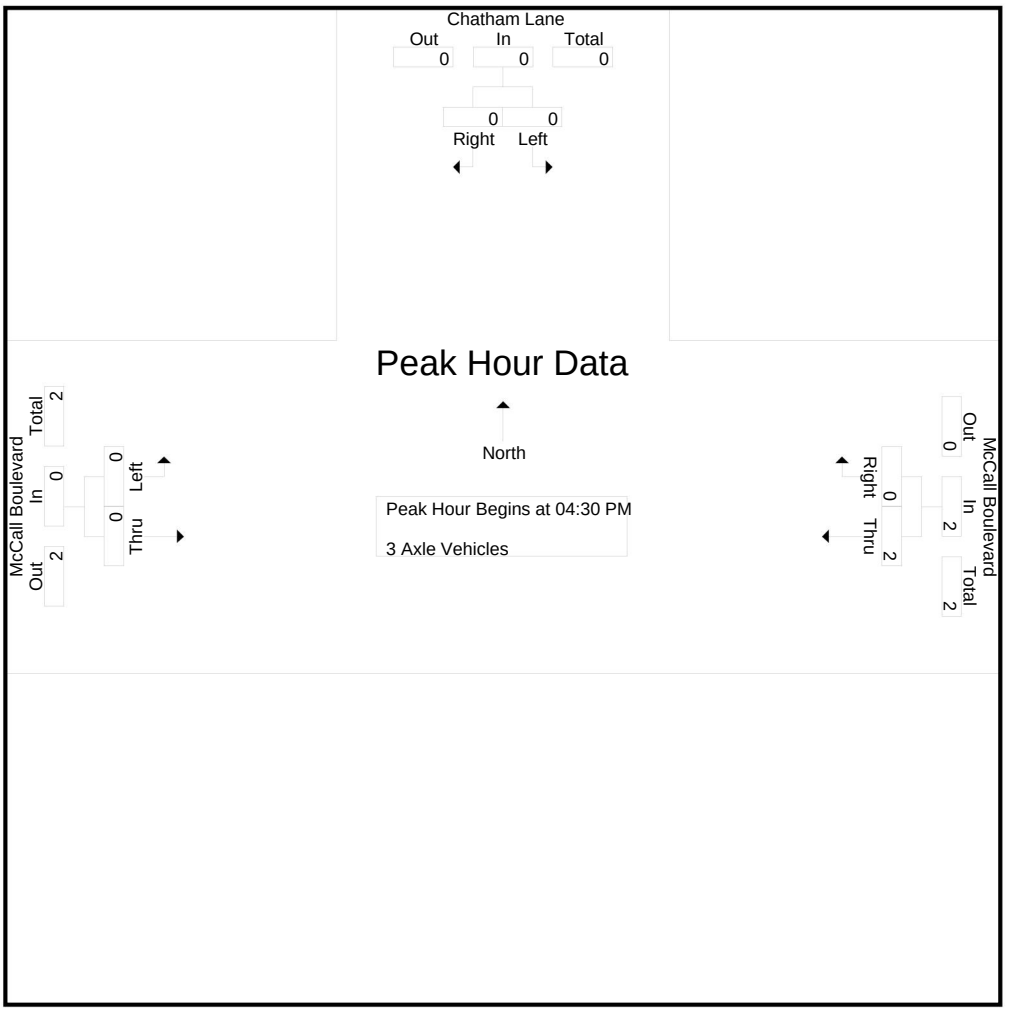
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	1	0	1	0	0	0	1
05:15 PM	0	0	0	1	0	1	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	0	0	0	2
Grand Total	0	0	0	2	0	2	0	0	0	2
Apprch %	0	0		100	0		0	0		
Total %	0	0	0	100	0	100	0	0	0	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	**1**	0	**1**	0	0	0	**1**
05:15 PM	0	0	0	1	0	1	0	0	0	1
Total Volume	0	0	0	2	0	2	0	0	0	2
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.500	.000	.500	.000	.000	.000	.500

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City of Menifee
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Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	**1**	0	**1**	0	0	0
+45 mins.	0	0	0	1	0	1	0	0	0
Total Volume	0	0	0	2	0	2	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.500	.000	.500	.000	.000	.000

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City of Menifee
N/S: Chatham Lane
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Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- 4+ Axle Trucks

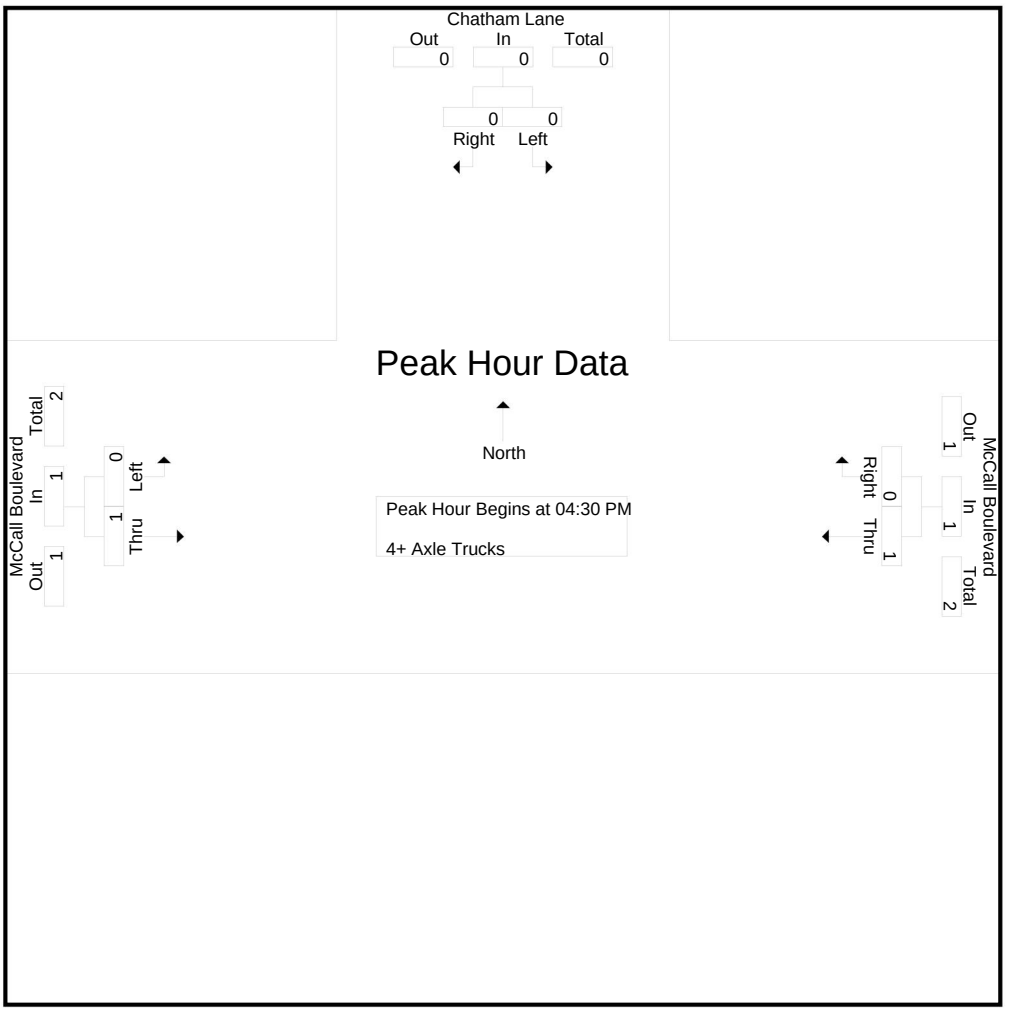
	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	1	1	1
04:30 PM	0	0	0	0	0	0	0	1	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	2	2
05:00 PM	0	0	0	1	0	1	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	1	0	1	0	1	1	2
Grand Total	0	0	0	1	0	1	0	3	3	4
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	25	0	25	0	75	75	

	Chatham Lane Southbound			McCall Boulevard Westbound			McCall Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	0	0	0	0	**1**	**1**	**1**
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	**1**	0	**1**	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	1	1	2
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.250	.000	.250	.000	.250	.250	.500

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Weather: Clear

File Name : 07_MEN_Chat_McC PM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	0	0	0	0	**1**	**1**
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	**1**	0	**1**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	1	1
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.250	.000	.250	.000	.250	.250

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

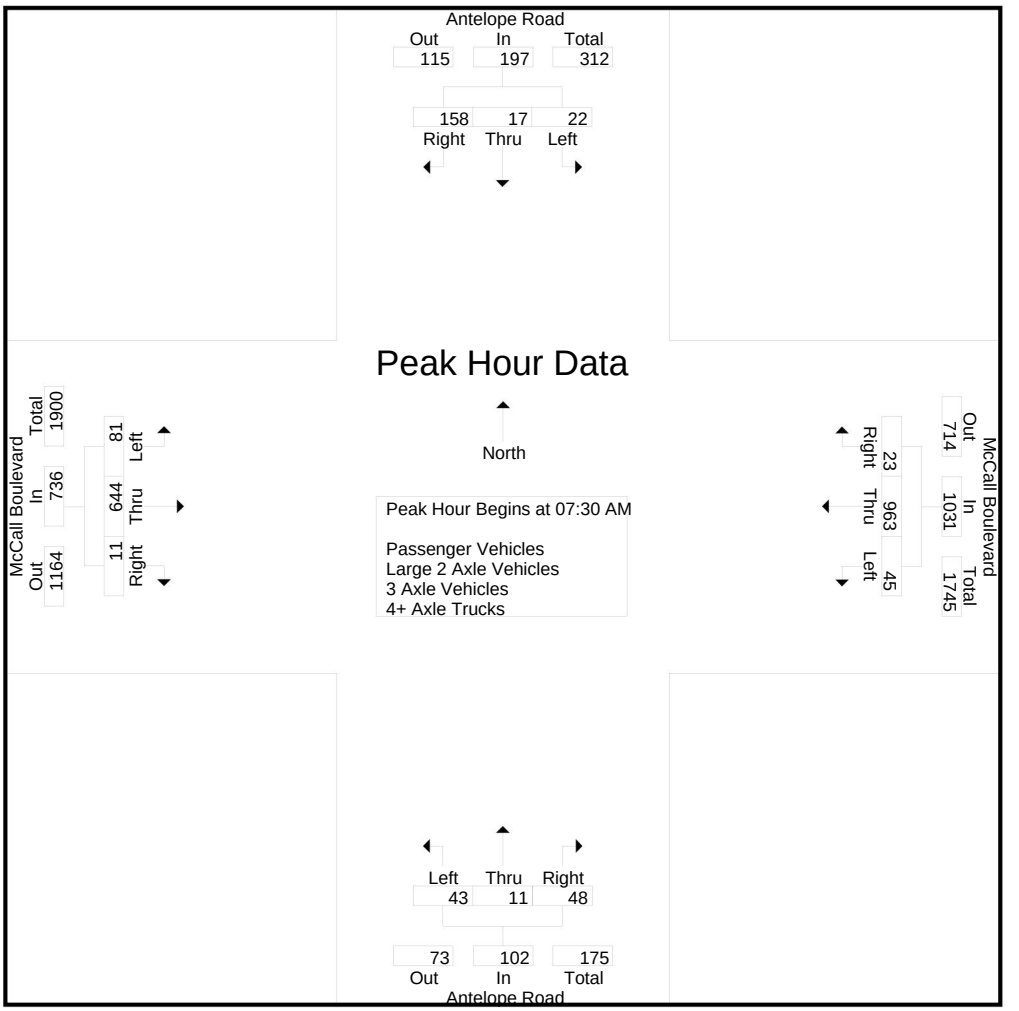
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	1	32	39	6	144	0	150	17	3	18	38	10	112	2	124	351
07:15 AM	1	3	30	34	4	181	2	187	13	5	22	40	14	164	1	179	440
07:30 AM	5	2	38	45	11	225	4	240	8	1	27	36	18	177	0	195	516
07:45 AM	8	5	48	61	15	243	13	271	14	4	7	25	23	167	3	193	550
Total	20	11	148	179	36	793	19	848	52	13	74	139	65	620	6	691	1857
08:00 AM	7	8	48	63	12	264	4	280	9	4	9	22	22	159	3	184	549
08:15 AM	2	2	24	28	7	231	2	240	12	2	5	19	18	141	5	164	451
08:30 AM	1	1	32	34	6	153	1	160	4	3	5	12	19	124	3	146	352
08:45 AM	1	3	36	40	7	142	2	151	6	3	5	14	17	79	1	97	302
Total	11	14	140	165	32	790	9	831	31	12	24	67	76	503	12	591	1654
Grand Total	31	25	288	344	68	1583	28	1679	83	25	98	206	141	1123	18	1282	3511
Apprch %	9	7.3	83.7		4.1	94.3	1.7		40.3	12.1	47.6		11	87.6	1.4		
Total %	0.9	0.7	8.2	9.8	1.9	45.1	0.8	47.8	2.4	0.7	2.8	5.9	4	32	0.5	36.5	
Passenger Vehicles	29	25	284	338	66	1551	28	1645	82	25	97	204	136	1098	18	1252	3439
% Passenger Vehicles	93.5	100	98.6	98.3	97.1	98	100	98	98.8	100	99	99	96.5	97.8	100	97.7	97.9
Large 2 Axle Vehicles	2	0	4	6	2	22	0	24	1	0	1	2	4	17	0	21	53
% Large 2 Axle Vehicles	6.5	0	1.4	1.7	2.9	1.4	0	1.4	1.2	0	1	1	2.8	1.5	0	1.6	1.5
3 Axle Vehicles	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
% 3 Axle Vehicles	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0.1	0	0.1	0.1
4+ Axle Trucks	0	0	0	0	0	8	0	8	0	0	0	0	1	7	0	8	16
% 4+ Axle Trucks	0	0	0	0	0	0.5	0	0.5	0	0	0	0	0.7	0.6	0	0.6	0.5

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	2	38	45	11	225	4	240	8	1	**27**	**36**	18	**177**	0	**195**	516
07:45 AM	**8**	5	**48**	61	**15**	243	**13**	271	**14**	**4**	7	25	**23**	167	3	193	**550**
08:00 AM	7	**8**	48	**63**	12	**264**	4	**280**	9	4	9	22	22	159	3	184	549
08:15 AM	2	2	24	28	7	231	2	240	12	2	5	19	18	141	**5**	164	451
Total Volume	22	17	158	197	45	963	23	1031	43	11	48	102	81	644	11	736	2066
% App. Total	11.2	8.6	80.2		4.4	93.4	2.2		42.2	10.8	47.1		11	87.5	1.5		
PHF	.688	.531	.823	.782	.750	.912	.442	.921	.768	.688	.444	.708	.880	.910	.550	.944	.939

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City of Menifee
N/S: Antelope Road
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Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:00 AM				07:15 AM			
+0 mins.	1	3	30	34	11	225	4	240	**17**	3	18	38	14	164	1	179
+15 mins.	5	2	38	45	**15**	243	**13**	271	13	**5**	22	**40**	18	**177**	0	**195**
+30 mins.	**8**	5	**48**	61	12	**264**	4	**280**	8	1	**27**	36	**23**	167	**3**	193
+45 mins.	7	**8**	48	**63**	7	231	2	240	14	4	7	25	22	159	3	184
Total Volume	21	18	164	203	45	963	23	1031	52	13	74	139	77	667	7	751
% App. Total	10.3	8.9	80.8		4.4	93.4	2.2		37.4	9.4	53.2		10.3	88.8	0.9	
PHF	.656	.563	.854	.806	.750	.912	.442	.921	.765	.650	.685	.869	.837	.942	.583	.963

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
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Groups Printed- Passenger Vehicles

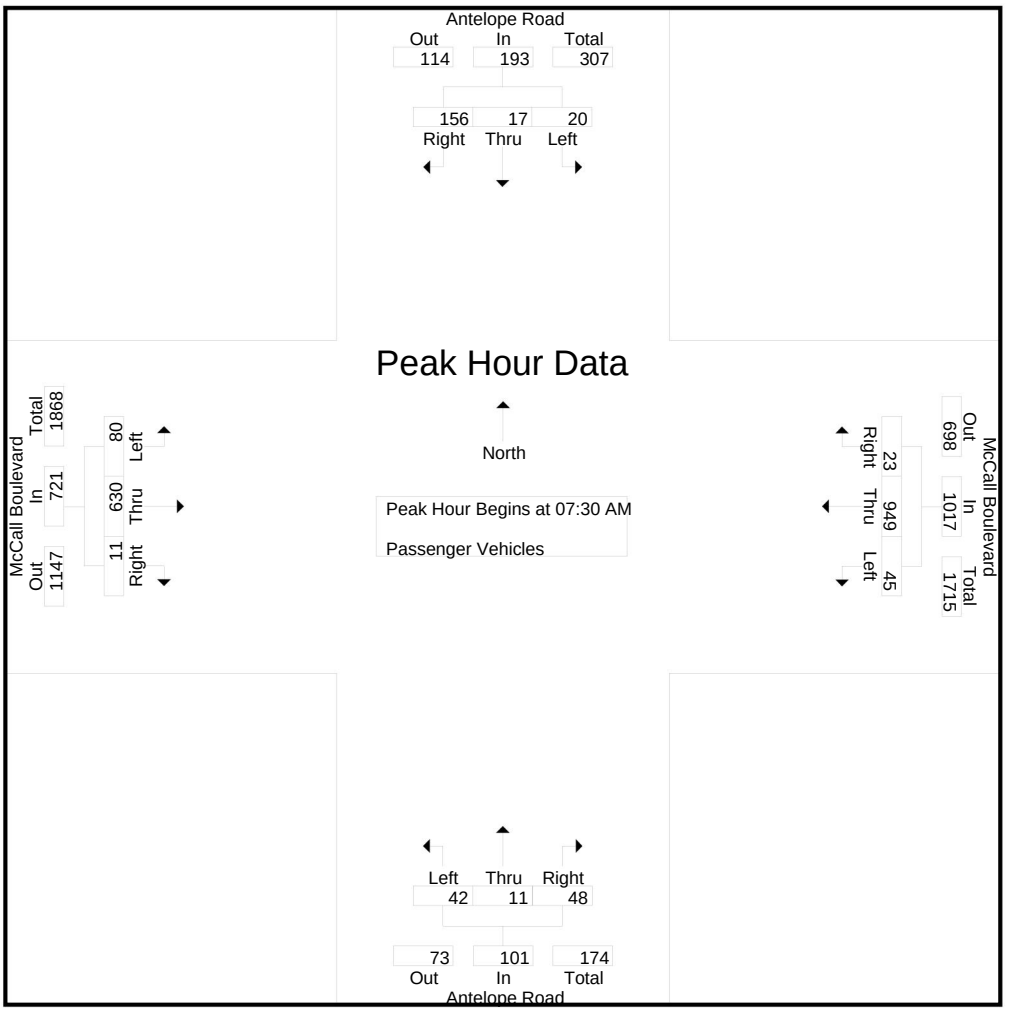
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	1	30	37	5	139	0	144	17	3	17	37	10	109	2	121	339
07:15 AM	1	3	30	34	3	180	2	185	13	5	22	40	12	161	1	174	433
07:30 AM	5	2	37	44	11	224	4	239	8	1	27	36	18	174	0	192	511
07:45 AM	7	5	48	60	15	240	13	268	14	4	7	25	23	162	3	188	541
Total	19	11	145	175	34	783	19	836	52	13	73	138	63	606	6	675	1824
08:00 AM	6	8	48	62	12	260	4	276	9	4	9	22	21	154	3	178	538
08:15 AM	2	2	23	27	7	225	2	234	11	2	5	18	18	140	5	163	442
08:30 AM	1	1	32	34	6	146	1	153	4	3	5	12	19	120	3	142	341
08:45 AM	1	3	36	40	7	137	2	146	6	3	5	14	15	78	1	94	294
Total	10	14	139	163	32	768	9	809	30	12	24	66	73	492	12	577	1615
Grand Total	29	25	284	338	66	1551	28	1645	82	25	97	204	136	1098	18	1252	3439
Apprch %	8.6	7.4	84		4	94.3	1.7		40.2	12.3	47.5		10.9	87.7	1.4		
Total %	0.8	0.7	8.3	9.8	1.9	45.1	0.8	47.8	2.4	0.7	2.8	5.9	4	31.9	0.5	36.4	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	2	37	44	11	224	4	239	8	1	**27**	**36**	18	**174**	0	**192**	511
07:45 AM	**7**	5	**48**	60	**15**	240	**13**	268	**14**	**4**	7	25	**23**	162	3	188	**541**
08:00 AM	6	**8**	48	**62**	12	**260**	4	**276**	9	4	9	22	21	154	3	178	538
08:15 AM	2	2	23	27	7	225	2	234	11	2	5	18	18	140	**5**	163	442
Total Volume	20	17	156	193	45	949	23	1017	42	11	48	101	80	630	11	721	2032
% App. Total	10.4	8.8	80.8		4.4	93.3	2.3		41.6	10.9	47.5		11.1	87.4	1.5		
PHF	.714	.531	.813	.778	.750	.913	.442	.921	.750	.688	.444	.701	.870	.905	.550	.939	.939

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	5	2	37	44	11	224	4	239	8	1	**27**	**36**	18	**174**	0	**192**
+15 mins.	**7**	5	**48**	60	**15**	240	**13**	268	**14**	**4**	7	25	**23**	162	3	188
+30 mins.	6	**8**	48	**62**	12	**260**	4	**276**	9	4	9	22	21	154	3	178
+45 mins.	2	2	23	27	7	225	2	234	11	2	5	18	18	140	**5**	163
Total Volume	20	17	156	193	45	949	23	1017	42	11	48	101	80	630	11	721
% App. Total	10.4	8.8	80.8		4.4	93.3	2.3		41.6	10.9	47.5		11.1	87.4	1.5	
PHF	.714	.531	.813	.778	.750	.913	.442	.921	.750	.688	.444	.701	.870	.905	.550	.939

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

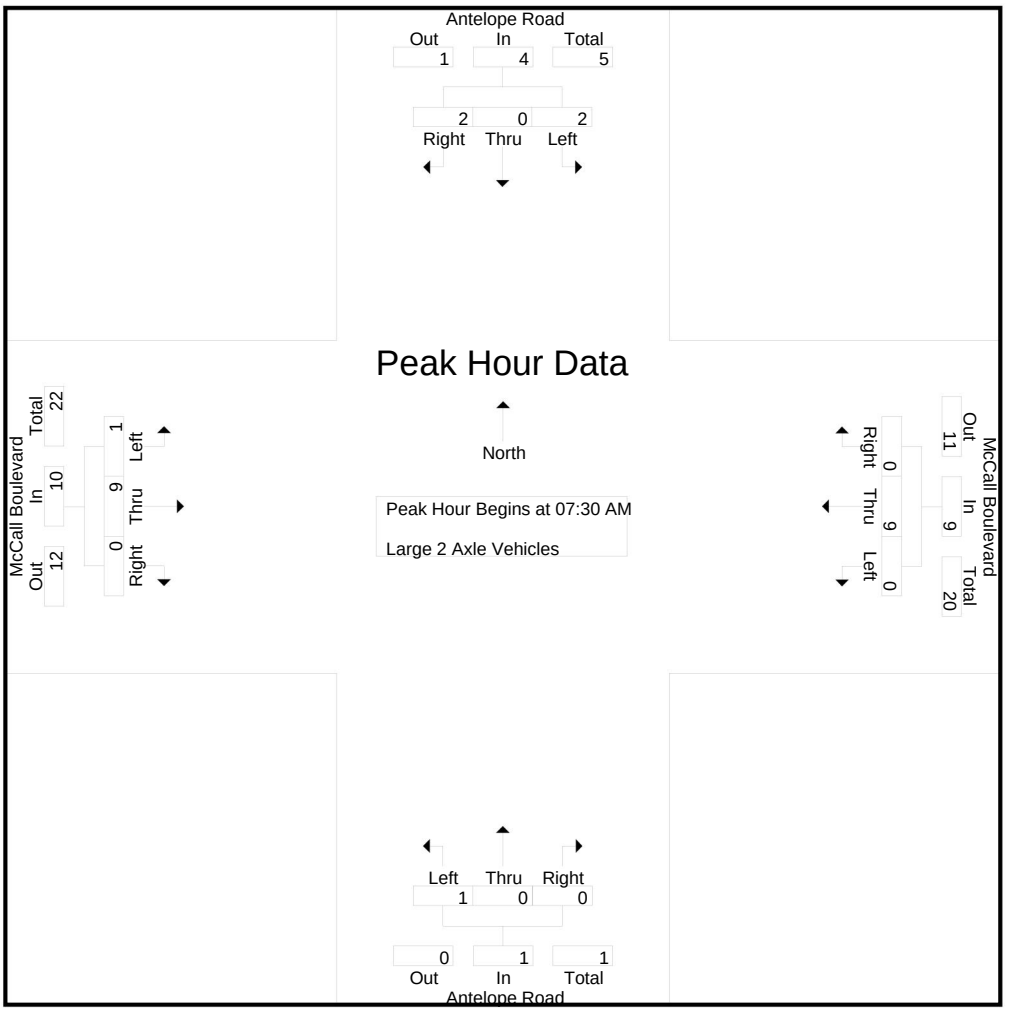
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	2	2	1	2	0	3	0	0	1	1	0	2	0	2	8
07:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1	2	0	3	4
07:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
07:45 AM	1	0	0	1	0	1	0	1	0	0	0	0	0	4	0	4	6
Total	1	0	3	4	2	3	0	5	0	0	1	1	1	9	0	10	20
08:00 AM	1	0	0	1	0	2	0	2	0	0	0	0	1	4	0	5	8
08:15 AM	0	0	1	1	0	6	0	6	1	0	0	1	0	0	0	0	8
08:30 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	3	0	3	9
08:45 AM	0	0	0	0	0	5	0	5	0	0	0	0	2	1	0	3	8
Total	1	0	1	2	0	19	0	19	1	0	0	1	3	8	0	11	33
Grand Total	2	0	4	6	2	22	0	24	1	0	1	2	4	17	0	21	53
Apprch %	33.3	0	66.7		8.3	91.7	0		50	0	50		19	81	0		
Total %	3.8	0	7.5	11.3	3.8	41.5	0	45.3	1.9	0	1.9	3.8	7.5	32.1	0	39.6	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	1	0	1	2
07:45 AM	**1**	0	0	1	0	1	0	1	0	0	0	0	0	**4**	0	4	6
08:00 AM	1	0	0	1	0	2	0	2	0	0	0	0	**1**	4	0	**5**	**8**
08:15 AM	0	0	1	1	0	**6**	0	**6**	**1**	0	0	**1**	0	0	0	0	8
Total Volume	2	0	2	4	0	9	0	9	1	0	0	1	1	9	0	10	24
% App. Total	50	0	50		0	100	0		100	0	0		10	90	0		
PHF	.500	.000	.500	1.00	.000	.375	.000	.375	.250	.000	.000	.250	.250	.563	.000	.500	.750

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	1	0	1
+15 mins.	**1**	0	0	1	0	1	0	1	0	0	0	0	0	**4**	0	4
+30 mins.	1	0	0	1	0	2	0	2	0	0	0	0	**1**	4	0	**5**
+45 mins.	0	0	1	1	0	**6**	0	**6**	**1**	0	0	**1**	0	0	0	0
Total Volume	2	0	2	4	0	9	0	9	1	0	0	1	1	9	0	10
% App. Total	50	0	50		0	100	0		100	0	0		10	90	0	
PHF	.500	.000	.500	1.000	.000	.375	.000	.375	.250	.000	.000	.250	.250	.563	.000	.500

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 3 Axle Vehicles

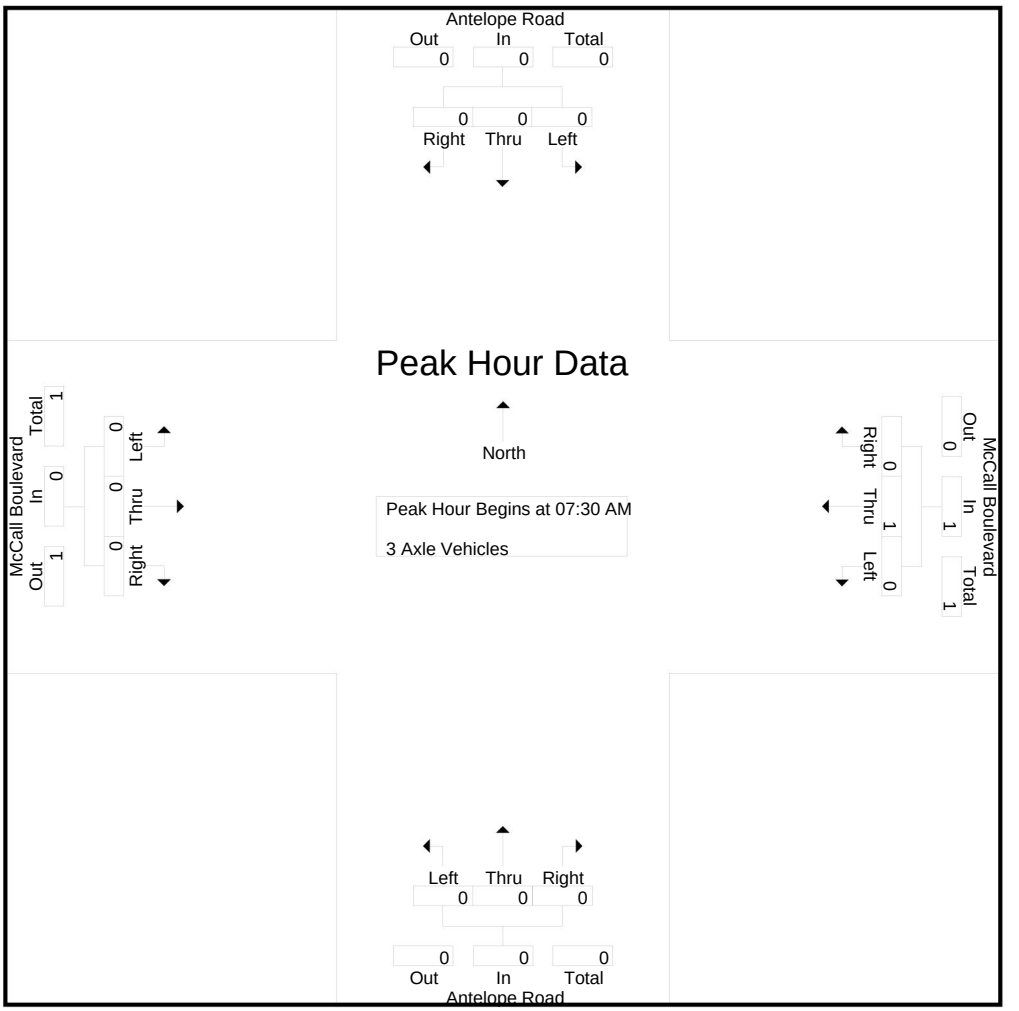
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	66.7	0	66.7	0	0	0	0	0	33.3	0	33.3	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**1**
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

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City of Menifee
N/S: Antelope Road
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Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

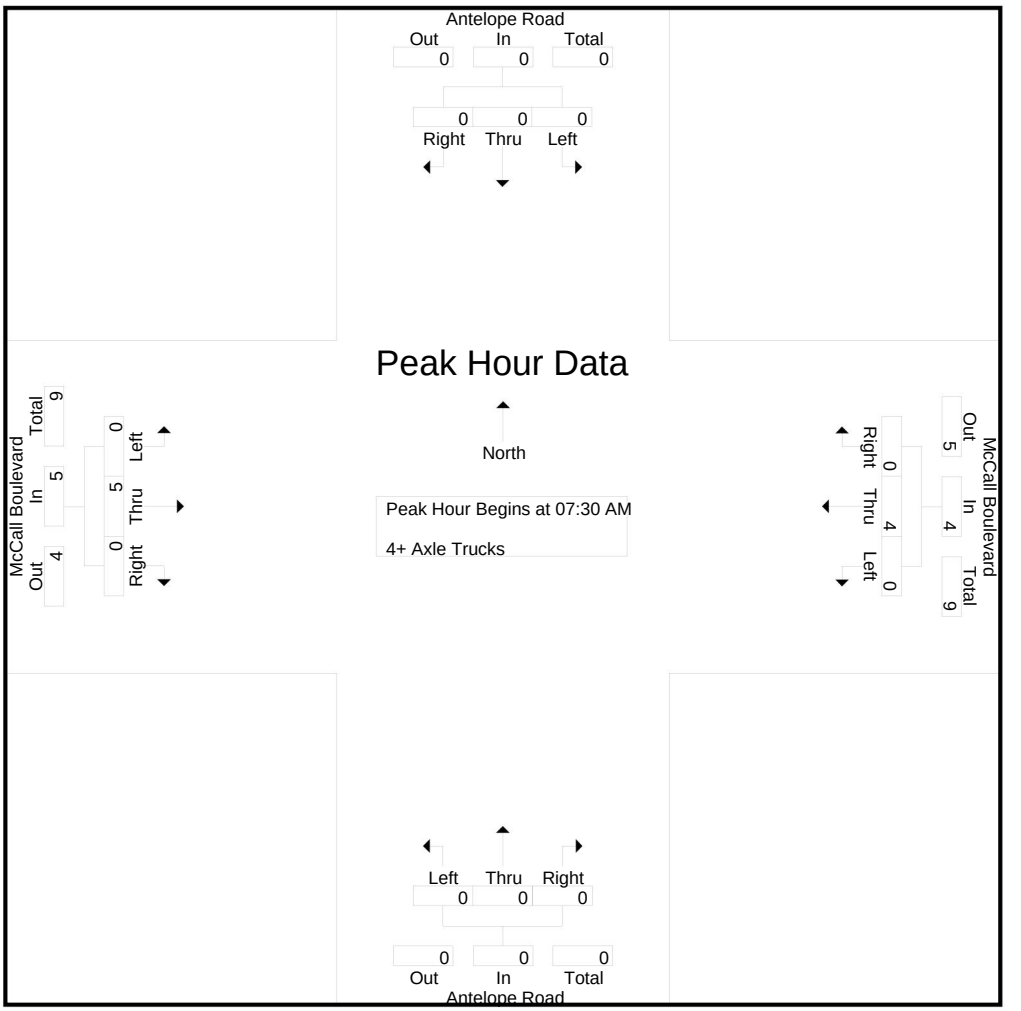
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
Total	0	0	0	0	0	7	0	7	0	0	0	0	1	4	0	5	12
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
Grand Total	0	0	0	0	0	8	0	8	0	0	0	0	1	7	0	8	16
Apprch %	0	0	0		0	100	0		0	0	0		12.5	87.5	0		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	6.2	43.8	0	50	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**	**3**
07:45 AM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	1	0	1	3
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	4	0	4	0	0	0	0	0	5	0	5	9
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625	.750

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC AM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**
+15 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	4	0	4	0	0	0	0	0	5	0	5
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

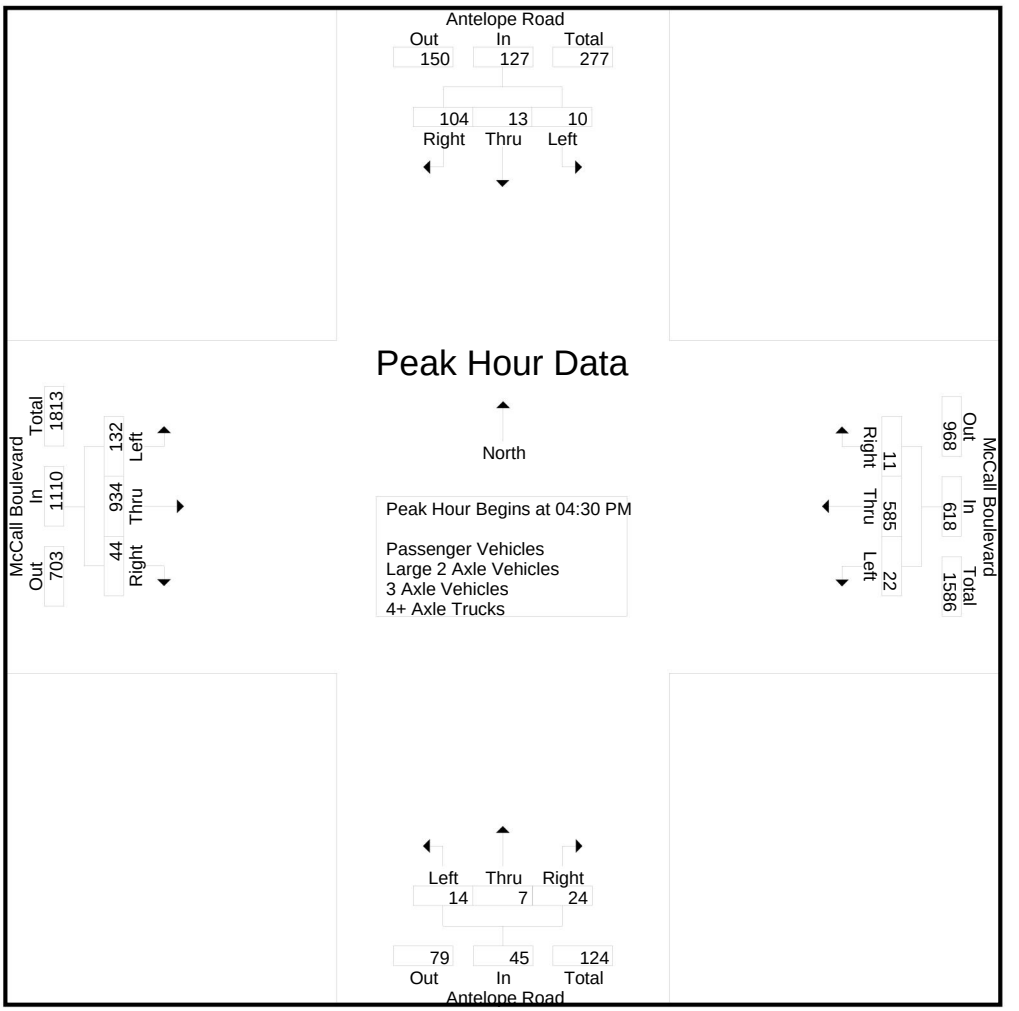
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	5	2	24	31	8	158	2	168	11	0	6	17	33	211	11	255	471
04:15 PM	8	5	28	41	1	117	2	120	9	0	8	17	39	209	12	260	438
04:30 PM	2	2	24	28	7	154	1	162	3	1	9	13	28	247	13	288	491
04:45 PM	2	3	25	30	6	149	3	158	3	1	6	10	35	211	11	257	455
Total	17	12	101	130	22	578	8	608	26	2	29	57	135	878	47	1060	1855
05:00 PM	3	3	20	26	5	157	4	166	5	3	2	10	36	228	11	275	477
05:15 PM	3	5	35	43	4	125	3	132	3	2	7	12	33	248	9	290	477
05:30 PM	4	1	23	28	8	161	2	171	4	3	6	13	38	206	5	249	461
05:45 PM	4	5	25	34	11	138	4	153	5	1	1	7	40	183	10	233	427
Total	14	14	103	131	28	581	13	622	17	9	16	42	147	865	35	1047	1842
Grand Total	31	26	204	261	50	1159	21	1230	43	11	45	99	282	1743	82	2107	3697
Apprch %	11.9	10	78.2		4.1	94.2	1.7		43.4	11.1	45.5		13.4	82.7	3.9		
Total %	0.8	0.7	5.5	7.1	1.4	31.3	0.6	33.3	1.2	0.3	1.2	2.7	7.6	47.1	2.2	57	
Passenger Vehicles	31	26	204	261	50	1150	21	1221	43	10	45	98	280	1731	82	2093	3673
% Passenger Vehicles	100	100	100	100	100	99.2	100	99.3	100	90.9	100	99	99.3	99.3	100	99.3	99.4
Large 2 Axle Vehicles	0	0	0	0	0	6	0	6	0	1	0	1	1	10	0	11	18
% Large 2 Axle Vehicles	0	0	0	0	0	0.5	0	0.5	0	9.1	0	1	0.4	0.6	0	0.5	0.5
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	3	0	3	0	0	0	0	1	2	0	3	6
% 4+ Axle Trucks	0	0	0	0	0	0.3	0	0.2	0	0	0	0	0.4	0.1	0	0.1	0.2

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	2	2	24	28	**7**	154	1	162	3	1	**9**	**13**	28	247	**13**	288	**491**
04:45 PM	2	3	25	30	6	149	3	158	3	1	6	10	35	211	11	257	455
05:00 PM	**3**	3	20	26	5	**157**	**4**	**166**	**5**	**3**	2	10	**36**	228	11	275	477
05:15 PM	3	**5**	**35**	**43**	4	125	3	132	3	2	7	12	33	**248**	9	**290**	477
Total Volume	10	13	104	127	22	585	11	618	14	7	24	45	132	934	44	1110	1900
% App. Total	7.9	10.2	81.9		3.6	94.7	1.8		31.1	15.6	53.3		11.9	84.1	4		
PHF	.833	.650	.743	.738	.786	.932	.688	.931	.700	.583	.667	.865	.917	.942	.846	.957	.967

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	3	3	20	26	6	149	3	158	**11**	0	6	**17**	28	247	**13**	288
+15 mins.	3	**5**	**35**	**43**	5	157	**4**	166	9	0	8	17	35	211	11	257
+30 mins.	**4**	1	23	28	4	125	3	132	3	**1**	**9**	13	**36**	228	11	275
+45 mins.	4	5	25	34	**8**	**161**	2	**171**	3	1	6	10	33	**248**	9	**290**
Total Volume	14	14	103	131	23	592	12	627	26	2	29	57	132	934	44	1110
% App. Total	10.7	10.7	78.6		3.7	94.4	1.9		45.6	3.5	50.9		11.9	84.1	4	
PHF	.875	.700	.736	.762	.719	.919	.750	.917	.591	.500	.806	.838	.917	.942	.846	.957

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Passenger Vehicles

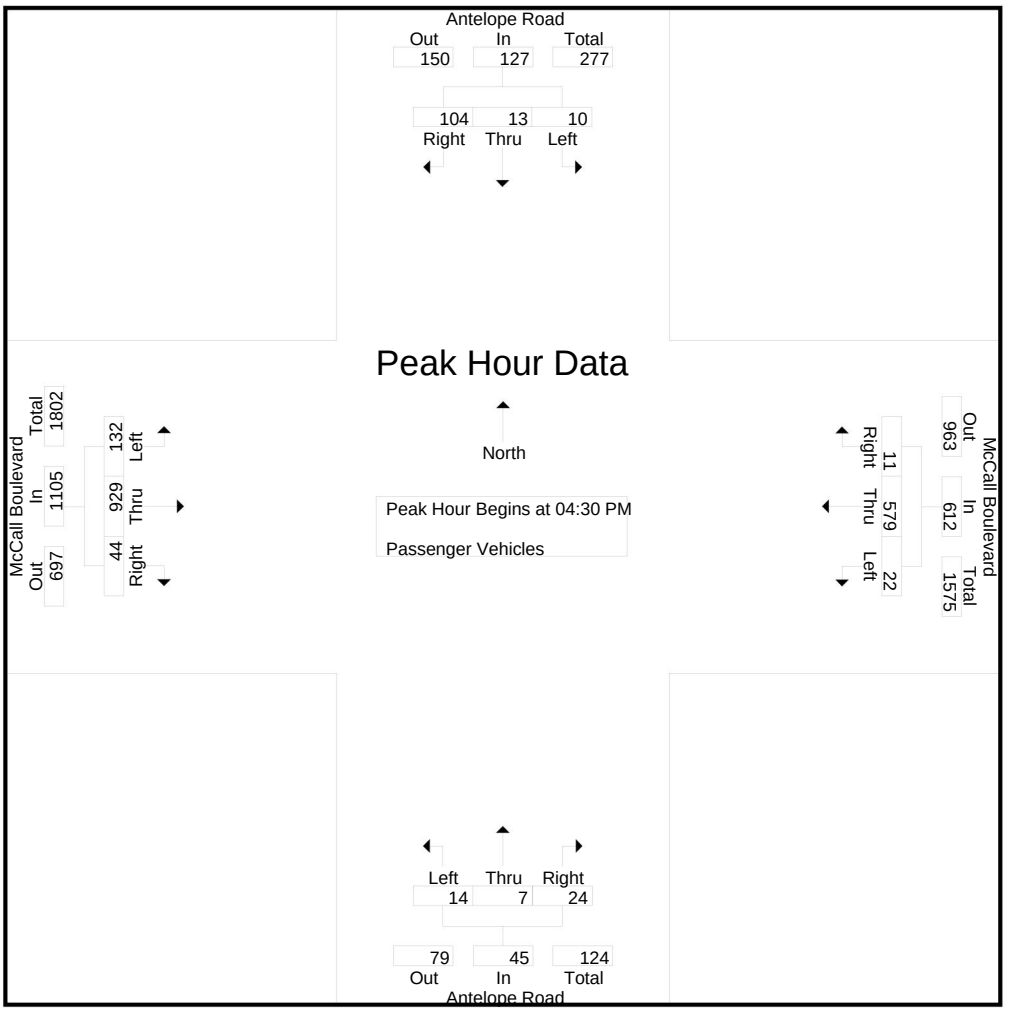
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	5	2	24	31	8	157	2	167	11	0	6	17	33	210	11	254	469
04:15 PM	8	5	28	41	1	116	2	119	9	0	8	17	37	206	12	255	432
04:30 PM	2	2	24	28	7	153	1	161	3	1	9	13	28	244	13	285	487
04:45 PM	2	3	25	30	6	149	3	158	3	1	6	10	35	209	11	255	453
Total	17	12	101	130	22	575	8	605	26	2	29	57	133	869	47	1049	1841
05:00 PM	3	3	20	26	5	153	4	162	5	3	2	10	36	228	11	275	473
05:15 PM	3	5	35	43	4	124	3	131	3	2	7	12	33	248	9	290	476
05:30 PM	4	1	23	28	8	161	2	171	4	2	6	12	38	205	5	248	459
05:45 PM	4	5	25	34	11	137	4	152	5	1	1	7	40	181	10	231	424
Total	14	14	103	131	28	575	13	616	17	8	16	41	147	862	35	1044	1832
Grand Total	31	26	204	261	50	1150	21	1221	43	10	45	98	280	1731	82	2093	3673
Apprch %	11.9	10	78.2		4.1	94.2	1.7		43.9	10.2	45.9		13.4	82.7	3.9		
Total %	0.8	0.7	5.6	7.1	1.4	31.3	0.6	33.2	1.2	0.3	1.2	2.7	7.6	47.1	2.2	57	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	2	2	24	28	**7**	**153**	1	161	3	1	**9**	**13**	28	244	**13**	285	**487**
04:45 PM	2	3	25	30	6	149	3	158	3	1	6	10	35	209	11	255	453
05:00 PM	**3**	3	20	26	5	153	**4**	**162**	**5**	**3**	2	10	**36**	228	11	275	473
05:15 PM	3	**5**	**35**	**43**	4	124	3	131	3	2	7	12	33	**248**	9	**290**	476
Total Volume	10	13	104	127	22	579	11	612	14	7	24	45	132	929	44	1105	1889
% App. Total	7.9	10.2	81.9		3.6	94.6	1.8		31.1	15.6	53.3		11.9	84.1	4		
PHF	.833	.650	.743	.738	.786	.946	.688	.944	.700	.583	.667	.865	.917	.936	.846	.953	.970

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	2	2	24	28	**7**	**153**	1	161	3	1	**9**	**13**	28	244	**13**	285
+15 mins.	2	3	25	30	6	149	3	158	3	1	6	10	35	209	11	255
+30 mins.	**3**	3	20	26	5	153	**4**	**162**	**5**	**3**	2	10	**36**	228	11	275
+45 mins.	3	**5**	**35**	**43**	4	124	3	131	3	2	7	12	33	**248**	9	**290**
Total Volume	10	13	104	127	22	579	11	612	14	7	24	45	132	929	44	1105
% App. Total	7.9	10.2	81.9		3.6	94.6	1.8		31.1	15.6	53.3		11.9	84.1	4	
PHF	.833	.650	.743	.738	.786	.946	.688	.944	.700	.583	.667	.865	.917	.936	.846	.953

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- Large 2 Axle Vehicles

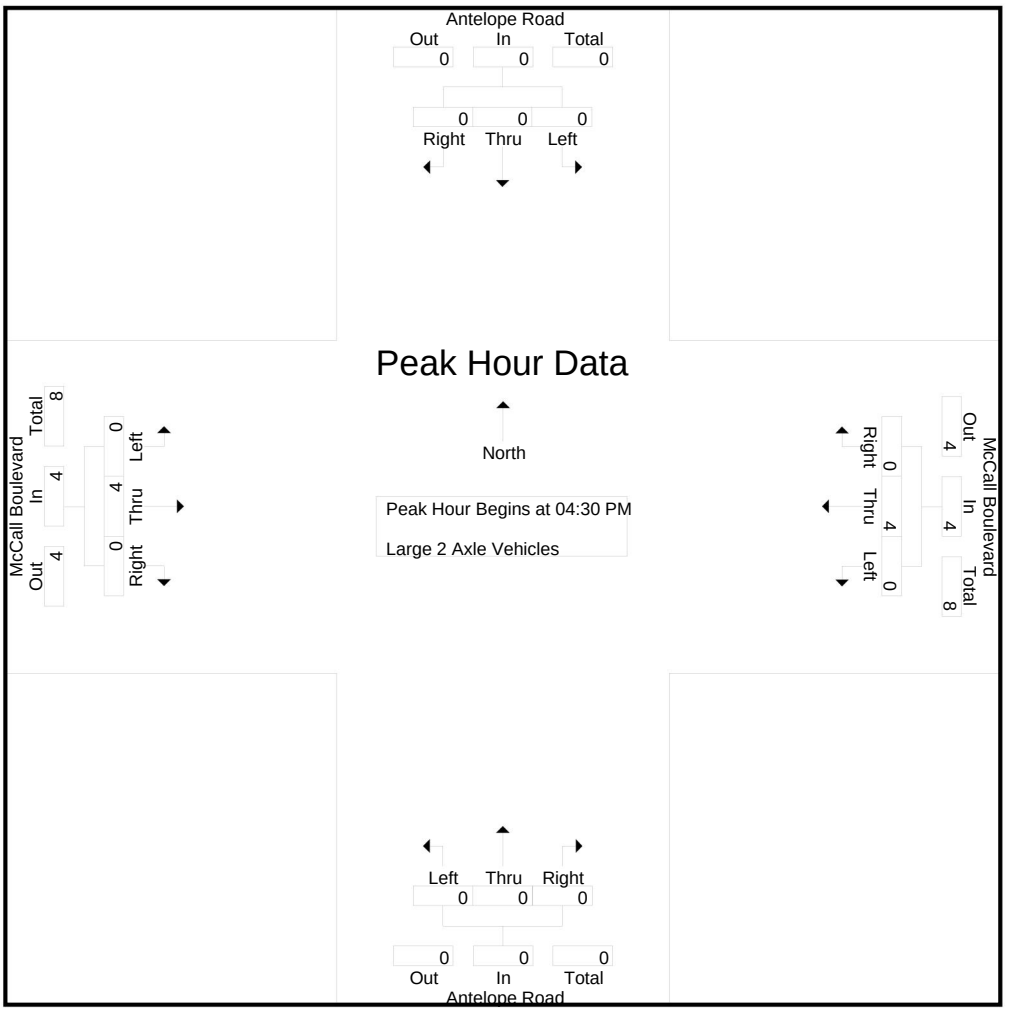
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	3	0	4	5
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	3	0	3	0	0	0	0	1	8	0	9	12
05:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	3	0	3	0	1	0	1	0	2	0	2	6
Grand Total	0	0	0	0	0	6	0	6	0	1	0	1	1	10	0	11	18
Apprch %	0	0	0		0	100	0		0	100	0		9.1	90.9	0		
Total %	0	0	0	0	0	33.3	0	33.3	0	5.6	0	5.6	5.6	55.6	0	61.1	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**	**3**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
05:00 PM	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	4	0	4	0	0	0	0	0	4	0	4	8
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.333	.000	.333	.000	.000	.000	.000	.000	.500	.000	.500	.667

Counts Unlimited, Inc.
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(951) 268-6268

City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	4	0	4	0	0	0	0	0	4	0	4
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.333	.000	.333	.000	.000	.000	.000	.000	.500	.000	.500

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(951) 268-6268

City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 3 Axle Vehicles

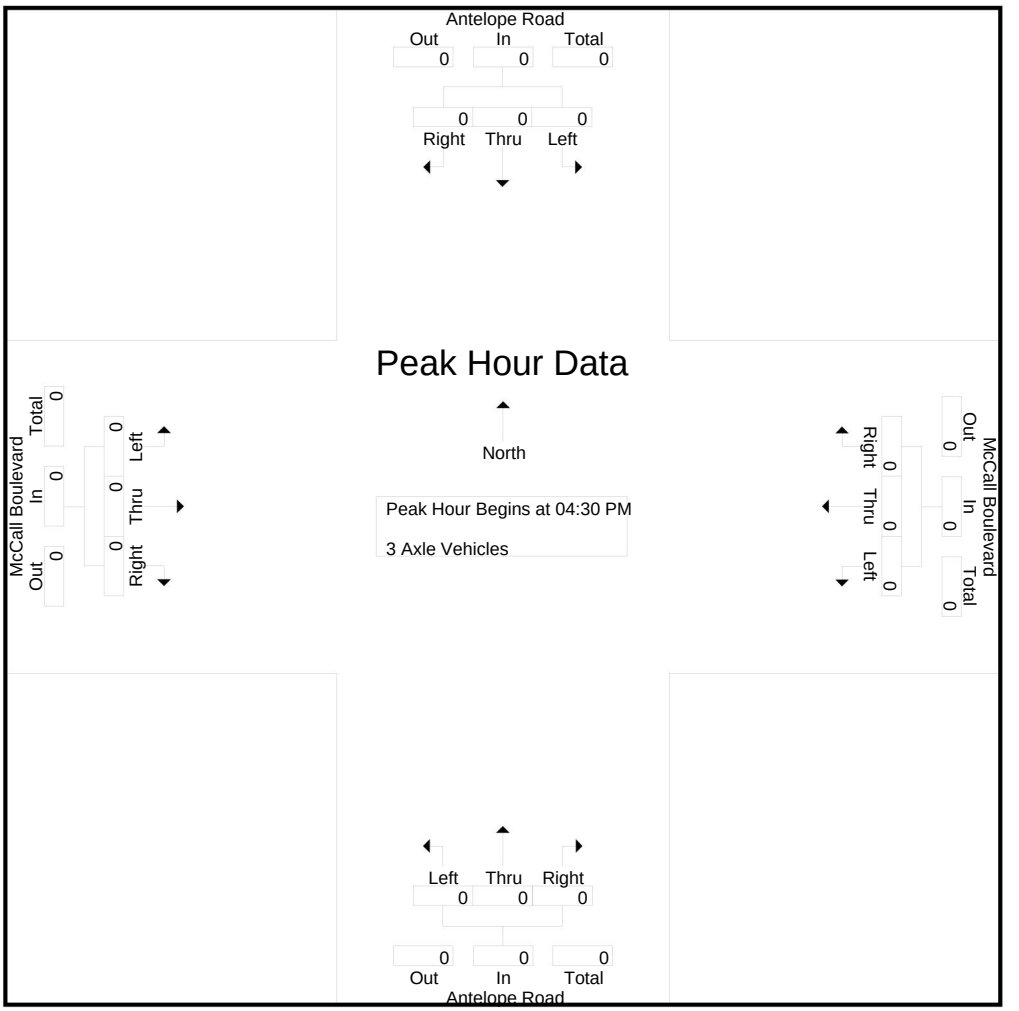
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 1

Groups Printed- 4+ Axle Trucks

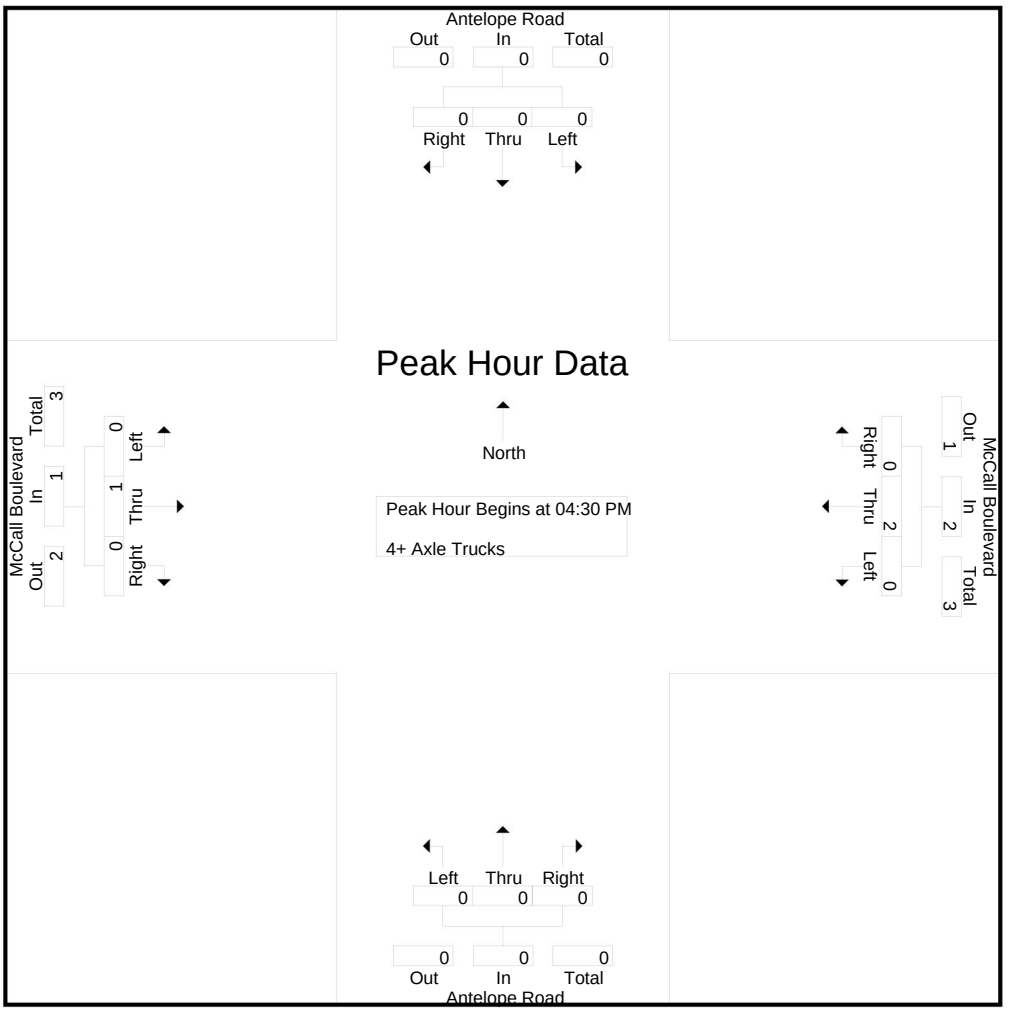
	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
Grand Total	0	0	0	0	0	3	0	3	0	0	0	0	1	2	0	3	6
Apprch %	0	0	0		0	100	0		0	0	0		33.3	66.7	0		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	16.7	33.3	0	50	

	Antelope Road Southbound				McCall Boulevard Westbound				Antelope Road Northbound				McCall Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	.750

Counts Unlimited, Inc.
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City of Menifee
N/S: Antelope Road
E/W: McCall Boulevard
Weather: Clear

File Name : 08_MEN_Ant_McC PM
Site Code : 99925111
Start Date : 2/4/2025
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250

Counts Unlimited, Inc.

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City of Menifee
Antelope Road
N/ McCall Boulevard
24 Hour Directional Classification Count

MEN001
Site Code: 999-25111

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/25	0	14	2	0	0	0	0	0	0	0	0	0	0	16
01:00	0	5	0	0	1	0	0	0	0	0	0	0	0	6
02:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	11	1	0	0	0	0	0	0	0	0	0	0	12
05:00	**1**	9	2	0	0	0	0	0	0	0	0	0	0	12
06:00	1	37	**18**	0	2	0	0	**1**	0	0	0	0	0	59
07:00	0	78	17	0	1	0	0	1	0	0	0	0	0	**97**
08:00	0	**81**	13	**1**	2	0	0	0	0	0	0	0	0	97
09:00	1	51	16	0	**3**	0	**1**	0	0	0	0	0	0	72
10:00	0	56	16	0	1	0	0	0	0	0	0	0	0	73
11:00	0	72	18	1	1	0	0	0	0	0	0	0	0	92
12 PM	0	82	19	0	3	0	**1**	0	0	0	0	0	0	105
13:00	1	93	14	0	0	0	0	0	0	**1**	0	0	0	109
14:00	0	97	22	0	0	0	0	0	0	0	0	0	0	119
15:00	0	**161**	**32**	**1**	**6**	0	0	0	0	0	0	0	0	**200**
16:00	0	114	29	0	1	0	0	0	0	1	0	0	0	145
17:00	0	139	29	0	1	0	0	0	0	0	0	0	0	169
18:00	**2**	147	26	1	0	0	0	0	0	0	0	0	0	176
19:00	0	147	20	0	1	0	0	0	0	0	0	0	0	168
20:00	1	82	13	0	1	0	0	0	0	0	0	0	0	97
21:00	0	60	11	0	0	0	0	0	0	0	0	0	0	71
22:00	0	35	3	0	0	0	0	0	0	0	0	0	0	38
23:00	0	25	2	0	0	0	0	0	0	0	0	0	0	27
Total	7	1602	324	4	24	0	2	2	0	2	0	0	0	1967
Percent	0.4%	81.4%	16.5%	0.2%	1.2%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	
AM Peak	05:00	08:00	06:00	08:00	09:00		09:00	06:00						07:00
Vol.	1	81	18	1	3		1	1						97
PM Peak	18:00	15:00	15:00	15:00	15:00		12:00			13:00				15:00
Vol.	2	161	32	1	6		1			1				200
Grand Total	7	1602	324	4	24	0	2	2	0	2	0	0	0	1967
Percent	0.4%	81.4%	16.5%	0.2%	1.2%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	

Counts Unlimited, Inc.
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email: counts@countsunlimited.com

City of Menifee
Antelope Road
N/ McCall Boulevard
24 Hour Directional Classification Count

MEN001
Site Code: 999-25111

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/25	0	6	0	0	0	0	0	0	**1**	0	0	0	0	7
01:00	0	5	0	0	1	0	0	0	0	0	0	0	0	6
02:00	0	5	2	0	0	0	0	0	0	0	0	0	0	7
03:00	0	18	3	0	0	0	0	0	0	0	0	0	0	21
04:00	0	50	8	0	0	0	0	0	0	0	0	0	0	58
05:00	**1**	62	17	0	0	0	0	0	0	0	0	0	0	80
06:00	0	87	21	0	0	0	0	0	1	0	0	0	0	109
07:00	1	**148**	**26**	**1**	**3**	0	0	0	0	0	0	0	0	**179**
08:00	0	142	21	0	2	0	0	0	0	0	0	0	0	165
09:00	1	118	19	0	1	**1**	0	0	0	0	0	0	0	140
10:00	0	98	20	0	1	0	0	0	0	0	0	0	0	119
11:00	1	81	20	0	1	0	0	0	0	0	0	0	0	103
12 PM	0	87	21	0	**4**	0	**1**	0	0	0	0	0	0	113
13:00	1	96	**32**	0	0	0	0	0	0	0	0	0	0	129
14:00	0	**132**	26	**1**	0	0	0	0	0	0	0	0	0	**159**
15:00	0	119	24	0	2	0	0	0	0	0	0	0	0	145
16:00	**2**	107	21	0	0	0	0	0	0	0	0	0	0	130
17:00	1	112	18	0	0	0	0	0	0	0	0	0	0	131
18:00	0	94	8	0	0	0	0	0	0	0	0	0	0	102
19:00	0	70	3	0	0	0	0	0	0	0	0	0	0	73
20:00	0	50	3	0	0	0	0	0	0	0	0	0	0	53
21:00	0	33	3	0	0	0	0	0	0	0	0	0	0	36
22:00	0	22	0	0	0	0	0	0	0	0	0	0	0	22
23:00	0	11	0	0	0	0	0	0	0	0	0	0	0	11
Total	8	1753	316	2	15	1	1	0	2	0	0	0	0	2098
Percent	0.4%	83.6%	15.1%	0.1%	0.7%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	05:00	07:00	07:00	07:00	07:00	09:00			00:00					07:00
Vol.	1	148	26	1	3	1			1					179
PM Peak	16:00	14:00	13:00	14:00	12:00		12:00							14:00
Vol.	2	132	32	1	4		1							159
Grand Total	8	1753	316	2	15	1	1	0	2	0	0	0	0	2098
Percent	0.4%	83.6%	15.1%	0.1%	0.7%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Menifee
Antelope Road
N/ McCall Boulevard
24 Hour Directional Classification Count

MEN001
Site Code: 999-25111

Northbound, Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/25	0	20	2	0	0	0	0	0	**1**	0	0	0	0	23
01:00	0	10	0	0	2	0	0	0	0	0	0	0	0	12
02:00	0	9	3	0	0	0	0	0	0	0	0	0	0	12
03:00	0	20	3	0	0	0	0	0	0	0	0	0	0	23
04:00	0	61	9	0	0	0	0	0	0	0	0	0	0	70
05:00	**2**	71	19	0	0	0	0	0	0	0	0	0	0	92
06:00	1	124	39	0	2	0	0	**1**	1	0	0	0	0	168
07:00	1	**226**	**43**	**1**	**4**	0	0	1	0	0	0	0	0	**276**
08:00	0	223	34	1	4	0	0	0	0	0	0	0	0	262
09:00	2	169	35	0	4	**1**	**1**	0	0	0	0	0	0	212
10:00	0	154	36	0	2	0	0	0	0	0	0	0	0	192
11:00	1	153	38	1	2	0	0	0	0	0	0	0	0	195
12 PM	0	169	40	0	7	0	**2**	0	0	0	0	0	0	218
13:00	**2**	189	46	0	0	0	0	0	0	**1**	0	0	0	238
14:00	0	229	48	**1**	0	0	0	0	0	0	0	0	0	278
15:00	0	**280**	**56**	1	**8**	0	0	0	0	0	0	0	0	**345**
16:00	2	221	50	0	1	0	0	0	0	1	0	0	0	275
17:00	1	251	47	0	1	0	0	0	0	0	0	0	0	300
18:00	2	241	34	1	0	0	0	0	0	0	0	0	0	278
19:00	0	217	23	0	1	0	0	0	0	0	0	0	0	241
20:00	1	132	16	0	1	0	0	0	0	0	0	0	0	150
21:00	0	93	14	0	0	0	0	0	0	0	0	0	0	107
22:00	0	57	3	0	0	0	0	0	0	0	0	0	0	60
23:00	0	36	2	0	0	0	0	0	0	0	0	0	0	38
Total	15	3355	640	6	39	1	3	2	2	2	0	0	0	4065
Percent	0.4%	82.5%	15.7%	0.1%	1.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	05:00	07:00	07:00	07:00	07:00	09:00	09:00	06:00	00:00					07:00
Vol.	2	226	43	1	4	1	1	1	1					276
PM Peak	13:00	15:00	15:00	14:00	15:00		12:00			13:00				15:00
Vol.	2	280	56	1	8		2			1				345
Grand Total	15	3355	640	6	39	1	3	2	2	2	0	0	0	4065
Percent	0.4%	82.5%	15.7%	0.1%	1.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

APPENDIX E:
Volume Development Worksheets

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
1 . Chatham Lane/ Chambers Avenue												
NBL	59	0	0	0	0	59	3	0	0	0	0	3
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	1	0	0	0	0	1	3	0	0	0	0	3
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	59	0	0	0	0	59	3	0	0	0	0	3
Departure	1	0	0	0	0	1	3	0	0	0	0	3
Total	60	0	0	0	0	60	6	0	0	0	0	6
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
West Leg												
Approach	1	0	0	0	0	1	3	0	0	0	0	3
Departure	59	0	0	0	0	59	3	0	0	0	0	3
Total	60	0	0	0	0	60	6	0	0	0	0	6
Total Approaches												
Approach	60	0	0	0	0	60	6	0	0	0	0	6
Departure	60	0	0	0	0	60	6	0	0	0	0	6
Total	120	0	0	0	0	120	12	0	0	0	0	12

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
2 . Driveway 1/ Chambers Avenue												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
3 . Antelope Road/ Chambers Avenue												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	106	1	0	0	2	108	161	1	0	0	2	163
NBR	9	0	0	0	0	9	8	0	0	0	0	8
SBL	0	0	0	0	0	0	1	0	0	0	0	1
SBT	186	1	1	1	7	193	124	0	0	0	0	124
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	14	0	0	0	0	14	5	0	0	0	0	5
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	1	0	0	0	0	1	0	0	0	0	0	0
North Leg												
Approach	186	1	1	1	7	193	125	0	0	0	0	125
Departure	107	1	0	0	2	109	161	1	0	0	2	163
Total	293	2	1	1	9	302	286	1	0	0	2	288
South Leg												
Approach	115	1	0	0	2	117	169	1	0	0	2	171
Departure	200	1	1	1	7	207	129	0	0	0	0	129
Total	315	2	1	1	9	324	298	1	0	0	2	300
East Leg												
Approach	15	0	0	0	0	15	5	0	0	0	0	5
Departure	9	0	0	0	0	9	9	0	0	0	0	9
Total	24	0	0	0	0	24	14	0	0	0	0	14
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	316	2	1	1	9	325	299	1	0	0	2	301
Departure	316	2	1	1	9	325	299	1	0	0	2	301
Total	632	4	2	2	18	650	598	2	0	0	4	602

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
4 . Chatham Lane/ Tioga Lane												
NBL	3	0	0	0	0	3	12	1	0	0	2	14
NBT	60	0	0	0	0	60	8	0	0	0	0	8
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	1	0	0	0	0	1	2	0	0	0	0	2
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	3	0	0	0	0	3	1	0	0	0	0	1
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	1	0	0	0	0	1	2	0	0	0	0	2
Departure	60	0	0	0	0	60	8	0	0	0	0	8
Total	61	0	0	0	0	61	10	0	0	0	0	10
South Leg												
Approach	63	0	0	0	0	63	20	1	0	0	2	22
Departure	4	0	0	0	0	4	3	0	0	0	0	3
Total	67	0	0	0	0	67	23	1	0	0	2	25
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
West Leg												
Approach	3	0	0	0	0	3	1	0	0	0	0	1
Departure	3	0	0	0	0	3	12	1	0	0	2	14
Total	6	0	0	0	0	6	13	1	0	0	2	15
Total Approaches												
Approach	67	0	0	0	0	67	23	1	0	0	2	25
Departure	67	0	0	0	0	67	23	1	0	0	2	25
Total	134	0	0	0	0	134	46	2	0	0	4	50

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
5 . Driveway 2/ Tioga Lane												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
6 . Antelope Road/ Tioga Lane												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
7 . Chatham Lane/ McCall Blvd												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	2	0	0	0	0	2	1	0	0	0	0	1
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	2	0	0	0	0	2	2	0	0	0	0	2
EBL	2	0	0	0	0	2	9	0	0	0	0	9
EBT	701	9	0	5	29	730	1,103	3	0	1	8	1,111
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	1,075	10	2	1	22	1,097	693	3	2	1	12	705
WBR	59	0	0	0	0	59	1	0	0	0	0	1
North Leg												
Approach	4	0	0	0	0	4	3	0	0	0	0	3
Departure	61	0	0	0	0	61	10	0	0	0	0	10
Total	65	0	0	0	0	65	13	0	0	0	0	13
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	1,134	10	2	1	22	1,156	694	3	2	1	12	706
Departure	703	9	0	5	29	732	1,104	3	0	1	8	1,112
Total	1,837	19	2	6	51	1,888	1,798	6	2	2	20	1,818
West Leg												
Approach	703	9	0	5	29	732	1,112	3	0	1	8	1,120
Departure	1,077	10	2	1	22	1,099	695	3	2	1	12	707
Total	1,780	19	2	6	51	1,831	1,807	6	2	2	20	1,827
Total Approaches												
Approach	1,841	19	2	6	51	1,892	1,809	6	2	2	20	1,829
Departure	1,841	19	2	6	51	1,892	1,809	6	2	2	20	1,829
Total	3,682	38	4	12	102	3,784	3,618	12	4	4	40	3,658

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Table E-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	3 Axle	4 Axle	PCE	Total PCE Volume
8 . Antelope Road/ McCall Blvd												
NBL	42	1	0	0	2	44	14	0	0	0	0	14
NBT	11	0	0	0	0	11	7	0	0	0	0	7
NBR	48	0	0	0	0	48	24	0	0	0	0	24
SBL	20	2	0	0	3	23	10	0	0	0	0	10
SBT	17	0	0	0	0	17	13	0	0	0	0	13
SBR	156	2	0	0	3	159	104	0	0	0	0	104
EBL	80	1	0	0	2	82	132	0	0	0	0	132
EBT	630	9	0	5	29	659	929	4	0	1	9	938
EBR	11	0	0	0	0	11	44	0	0	0	0	44
WBL	45	0	0	0	0	45	22	0	0	0	0	22
WBT	949	9	1	4	28	977	579	4	0	2	12	591
WBR	23	0	0	0	0	23	11	0	0	0	0	11
North Leg												
Approach	193	4	0	0	6	199	127	0	0	0	0	127
Departure	114	1	0	0	2	116	150	0	0	0	0	150
Total	307	5	0	0	8	315	277	0	0	0	0	277
South Leg												
Approach	101	1	0	0	2	103	45	0	0	0	0	45
Departure	73	0	0	0	0	73	79	0	0	0	0	79
Total	174	1	0	0	2	176	124	0	0	0	0	124
East Leg												
Approach	1,017	9	1	4	28	1,045	612	4	0	2	12	624
Departure	698	11	0	5	32	730	963	4	0	1	9	972
Total	1,715	20	1	9	60	1,775	1,575	8	0	3	21	1,596
West Leg												
Approach	721	10	0	5	31	752	1,105	4	0	1	9	1,114
Departure	1,147	12	1	4	33	1,180	697	4	0	2	12	709
Total	1,868	22	1	9	64	1,932	1,802	8	0	3	21	1,823
Total Approaches												
Approach	2,032	24	1	9	67	2,099	1,889	8	0	3	21	1,910
Departure	2,032	24	1	9	67	2,099	1,889	8	0	3	21	1,910
Total	4,064	48	2	18	134	4,198	3,778	16	0	6	42	3,820

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
1 . Chatham Lane/ Chambers Avenue								
NBL	59	-7	2	54	3		2	5
NBT	0		0	0	0		0	0
NBR	0		2	2	0		4	4
SBL	0		0	0	0		0	0
SBT	0		0	0	0		0	0
SBR	0		0	0	0		0	0
EBL	0		0	0	0		0	0
EBT	0		1	1	0		2	2
EBR	1		1	2	3		2	5
WBL	0		5	5	0		3	3
WBT	0	7	2	9	0		2	2
WBR	0		0	0	0		0	0
North Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
South Leg								
Approach	59	-7	4	56	3	0	6	9
Departure	1	0	6	7	3	0	5	8
Total	60	-7	10	63	6	0	11	17
East Leg								
Approach	0	7	7	14	0	0	5	5
Departure	0	0	3	3	0	0	6	6
Total	0	7	10	17	0	0	11	11
West Leg								
Approach	1	0	2	3	3	0	4	7
Departure	59	0	4	63	3	0	4	7
Total	60	0	6	66	6	0	8	14
Total Approaches								
Approach	60	0	13	73	6	0	15	21
Departure	60	0	13	73	6	0	15	21
Total	120	0	26	146	12	0	30	42

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
2 Driveway 1/ Chambers Avenue								
NBL	0		7	7	0		5	5
NBT	0		0	0	0		0	0
NBR	0		16	16	0		11	11
SBL	0		0	0	0		0	0
SBT	0		0	0	0		0	0
SBR	0		0	0	0		0	0
EBL	0		0	0	0		0	0
EBT	0		0	0	0		0	0
EBR	0		2	2	0		7	7
WBL	0		6	6	0		15	15
WBT	0	7	0	7	0		0	0
WBR	0		0	0	0		0	0
North Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
South Leg								
Approach	0	0	23	23	0	0	16	16
Departure	0	0	8	8	0	0	22	22
Total	0	0	31	31	0	0	38	38
East Leg								
Approach	0	7	6	13	0	0	15	15
Departure	0	0	16	16	0	0	11	11
Total	0	7	22	29	0	0	26	26
West Leg								
Approach	0	0	2	2	0	0	7	7
Departure	0	7	7	14	0	0	5	5
Total	0	7	9	16	0	0	12	12
Total Approaches								
Approach	0	7	31	38	0	0	38	38
Departure	0	7	31	38	0	0	38	38
Total	0	14	62	76	0	0	76	76

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
3 Antelope Road/ Chambers Avenue								
NBL	0	1	4	5	0		11	11
NBT	108		0	108	163		0	163
NBR	9		0	9	8		0	8
SBL	0		0	0	1		0	1
SBT	193	-6	0	187	124		0	124
SBR	0	6	2	8	0		4	4
EBL	0		5	5	0		3	3
EBT	0		0	0	0		0	0
EBR	0		12	12	0		8	8
WBL	14		0	14	5		0	5
WBT	0		0	0	0		0	0
WBR	1		0	1	0		0	0
North Leg								
Approach	193	0	2	195	125	0	4	129
Departure	109	0	5	114	163	0	3	166
Total	302	0	7	309	288	0	7	295
South Leg								
Approach	117	1	4	122	171	0	11	182
Departure	207	-6	12	213	129	0	8	137
Total	324	-5	16	335	300	0	19	319
East Leg								
Approach	15	0	0	15	5	0	0	5
Departure	9	0	0	9	9	0	0	9
Total	24	0	0	24	14	0	0	14
West Leg								
Approach	0	0	17	17	0	0	11	11
Departure	0	7	6	13	0	0	15	15
Total	0	7	23	30	0	0	26	26
Total Approaches								
Approach	325	1	23	349	301	0	26	327
Departure	325	1	23	349	301	0	26	327
Total	650	2	46	698	602	0	52	654

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
4 Chatham Lane/ Tioga Lane								
NBL	3	-3	0	0	14		0	14
NBT	60	-7	2	55	8		4	12
NBR	0		2	2	0		7	7
SBL	0		1	1	0		2	2
SBT	1		5	6	2		3	5
SBR	0		0	0	0		0	0
EBL	0		0	0	0		0	0
EBT	0		0	0	0		0	0
EBR	3		0	3	1		0	1
WBL	0		7	7	0		5	5
WBT	0	3	0	3	0		0	0
WBR	0		2	2	0		2	2
North Leg								
Approach	1	0	6	7	2	0	5	7
Departure	60	-7	4	57	8	0	6	14
Total	61	-7	10	64	10	0	11	21
South Leg								
Approach	63	-10	4	57	22	0	11	33
Departure	4	0	12	16	3	0	8	11
Total	67	-10	16	73	25	0	19	44
East Leg								
Approach	0	3	9	12	0	0	7	7
Departure	0	0	3	3	0	0	9	9
Total	0	3	12	15	0	0	16	16
West Leg								
Approach	3	0	0	3	1	0	0	1
Departure	3	0	0	3	14	0	0	14
Total	6	0	0	6	15	0	0	15
Total Approaches								
Approach	67	-7	19	79	25	0	23	48
Departure	67	-7	19	79	25	0	23	48
Total	134	-14	38	158	50	0	46	96

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
5 Driveway 2/ Tioga Lane								
NBL	0		0	0	0		0	0
NBT	0		0	0	0		0	0
NBR	0		0	0	0		0	0
SBL	0		14	14	0		9	9
SBT	0		0	0	0		0	0
SBR	0		9	9	0		6	6
EBL	0		3	3	0		9	9
EBT	0		0	0	0		0	0
EBR	0		0	0	0		0	0
WBL	0		0	0	0		0	0
WBT	0	3	0	3	0		0	0
WBR	0		5	5	0		13	13
North Leg								
Approach	0	0	23	23	0	0	15	15
Departure	0	0	8	8	0	0	22	22
Total	0	0	31	31	0	0	37	37
South Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
East Leg								
Approach	0	3	5	8	0	0	13	13
Departure	0	0	14	14	0	0	9	9
Total	0	3	19	22	0	0	22	22
West Leg								
Approach	0	0	3	3	0	0	9	9
Departure	0	3	9	12	0	0	6	6
Total	0	3	12	15	0	0	15	15
Total Approaches								
Approach	0	3	31	34	0	0	37	37
Departure	0	3	31	34	0	0	37	37
Total	0	6	62	68	0	0	74	74

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
6 Antelope Road/ Tioga Lane								
NBL	0	1	5	6	0		13	13
NBT	116	1	4	121	0		11	11
NBR	0		0	0	0		0	0
SBL	0		0	0	0		0	0
SBT	199	-2	12	209	0		8	8
SBR	0	2	0	2	0		0	0
EBL	0		0	0	0		0	0
EBT	0		0	0	0		0	0
EBR	0		14	14	0		9	9
WBL	0		0	0	0		0	0
WBT	0		0	0	0		0	0
WBR	0		0	0	0		0	0
North Leg								
Approach	199	0	12	211	0	0	8	8
Departure	116	1	4	121	0	0	11	11
Total	315	1	16	332	0	0	19	19
South Leg								
Approach	116	2	9	127	0	0	24	24
Departure	199	-2	26	223	0	0	17	17
Total	315	0	35	350	0	0	41	41
East Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
West Leg								
Approach	0	0	14	14	0	0	9	9
Departure	0	3	5	8	0	0	13	13
Total	0	3	19	22	0	0	22	22
Total Approaches								
Approach	315	2	35	352	0	0	41	41
Departure	315	2	35	352	0	0	41	41
Total	630	4	70	704	0	0	82	82

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
7 Chatham Lane/ McCall Blvd								
NBL	0		0	0	0		0	0
NBT	0		0	0	0		0	0
NBR	0		0	0	0		0	0
SBL	2		0	2	1		0	1
SBT	0		0	0	0		0	0
SBR	2		12	14	2		8	10
EBL	2		4	6	9		11	20
EBT	730		4	734	1,111		11	1122
EBR	0		0	0	0		0	0
WBL	0		0	0	0		0	0
WBT	1,097		12	1109	705		8	713
WBR	59	-10	0	49	1		0	1
North Leg								
Approach	4	0	12	16	3	0	8	11
Departure	61	-10	4	55	10	0	11	21
Total	65	-10	16	71	13	0	19	32
South Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
East Leg								
Approach	1,156	-10	12	1,158	706	0	8	714
Departure	732	0	4	736	1,112	0	11	1,123
Total	1,888	-10	16	1,894	1,818	0	19	1,837
West Leg								
Approach	732	0	8	740	1,120	0	22	1,142
Departure	1,099	0	24	1,123	707	0	16	723
Total	1,831	0	32	1,863	1,827	0	38	1,865
Total Approaches								
Approach	1,892	-10	32	1,914	1,829	0	38	1,867
Departure	1,892	-10	32	1,914	1,829	0	38	1,867
Total	3,784	-20	64	3,828	3,658	0	76	3,734

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Table E-2 - Existing Plus Project Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips	Exist Volumes	Adjustments	Project Trips	Exist Plus Project Trips
8 Antelope Road/ McCall Blvd								
NBL	44	-2	0	42	14		0	14
NBT	11	2	2	15	7		4	11
NBR	48		0	48	24		0	24
SBL	23		9	32	10		6	16
SBT	17		5	22	13		3	16
SBR	159	-8	12	163	104		8	112
EBL	82		4	86	132		11	143
EBT	659		0	659	938		0	938
EBR	11		0	11	44		0	44
WBL	45		0	45	22		0	22
WBT	977		0	977	591		0	591
WBR	23		3	26	11		9	20
North Leg								
Approach	199	-8	26	217	127	0	17	144
Departure	116	2	9	127	150	0	24	174
Total	315	-6	35	344	277	0	41	318
South Leg								
Approach	103	0	2	105	45	0	4	49
Departure	73	0	5	78	79	0	3	82
Total	176	0	7	183	124	0	7	131
East Leg								
Approach	1,045	0	3	1,048	624	0	9	633
Departure	730	0	9	739	972	0	6	978
Total	1,775	0	12	1,787	1,596	0	15	1,611
West Leg								
Approach	752	0	4	756	1,114	0	11	1,125
Departure	1,180	-10	12	1,182	709	0	8	717
Total	1,932	-10	16	1,938	1,823	0	19	1,842
Total Approaches								
Approach	2,099	-8	35	2,126	1,910	0	41	1,951
Departure	2,099	-8	35	2,126	1,910	0	41	1,951
Total	4,198	-16	70	4,252	3,820	0	82	3,902

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
1 . Chatham Lane/ Chambers Avenue										
NBL	52	1	53	2	55	3	0	3	2	5
NBT	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	2	2	0	0	0	4	4
SBL	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	1	1	0	0	0	2	2
EBR	1	0	1	1	2	3	0	3	2	5
WBL	0	0	0	5	5	0	0	0	3	3
WBT	7	0	7	2	9	0	0	0	2	2
WBR	0	0	0	0	0	0	0	0	0	0
North Leg										
Approach	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
South Leg										
Approach	52	1	53	4	57	3	0	3	6	9
Departure	1	0	1	6	7	3	0	3	5	8
Total	53	1	54	10	64	6	0	6	11	17
East Leg										
Approach	7	0	7	7	14	0	0	0	5	5
Departure	0	0	0	3	3	0	0	0	6	6
Total	7	0	7	10	17	0	0	0	11	11
West Leg										
Approach	1	0	1	2	3	3	0	3	4	7
Departure	59	1	60	4	64	3	0	3	4	7
Total	60	1	61	6	67	6	0	6	8	14
Total Approaches										
Approach	60	1	61	13	74	6	0	6	15	21
Departure	60	1	61	13	74	6	0	6	15	21
Total	120	2	122	26	148	12	0	12	30	42

Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
2 Driveway 1/ Chambers Avenue										
NBL	0	0	0	7	7	0	0	0	5	5
NBT	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	16	16	0	0	0	11	11
SBL	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	2	2	0	0	0	7	7
WBL	0	0	0	6	6	0	0	0	15	15
WBT	7	0	7	0	7	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0
North Leg										
Approach	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
South Leg										
Approach	0	0	0	23	23	0	0	0	16	16
Departure	0	0	0	8	8	0	0	0	22	22
Total	0	0	0	31	31	0	0	0	38	38
East Leg										
Approach	7	0	7	6	13	0	0	0	15	15
Departure	0	0	0	16	16	0	0	0	11	11
Total	7	0	7	22	29	0	0	0	26	26
West Leg										
Approach	0	0	0	2	2	0	0	0	7	7
Departure	7	0	7	7	14	0	0	0	5	5
Total	7	0	7	9	16	0	0	0	12	12
Total Approaches										
Approach	7	0	7	31	38	0	0	0	38	38
Departure	7	0	7	31	38	0	0	0	38	38
Total	14	0	14	62	76	0	0	0	76	76

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
3 Antelope Road/ Chambers Avenue										
NBL	1	0	1	4	5	0	0	0	11	11
NBT	108	2	110	0	110	163	3	166	0	166
NBR	9	0	9	0	9	8	0	8	0	8
SBL	0	0	0	0	0	1	0	1	0	1
SBT	187	4	191	0	191	124	2	126	0	126
SBR	6	0	6	2	8	0	0	0	4	4
EBL	0	0	0	5	5	0	0	0	3	3
EBT	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	12	12	0	0	0	8	8
WBL	14	0	14	0	14	5	0	5	0	5
WBT	0	0	0	0	0	0	0	0	0	0
WBR	1	0	1	0	1	0	0	0	0	0
North Leg										
Approach	193	4	197	2	199	125	2	127	4	131
Departure	109	2	111	5	116	163	3	166	3	169
Total	302	6	308	7	315	288	5	293	7	300
South Leg										
Approach	118	2	120	4	124	171	3	174	11	185
Departure	201	4	205	12	217	129	2	131	8	139
Total	319	6	325	16	341	300	5	305	19	324
East Leg										
Approach	15	0	15	0	15	5	0	5	0	5
Departure	9	0	9	0	9	9	0	9	0	9
Total	24	0	24	0	24	14	0	14	0	14
West Leg										
Approach	0	0	0	17	17	0	0	0	11	11
Departure	7	0	7	6	13	0	0	0	15	15
Total	7	0	7	23	30	0	0	0	26	26
Total Approaches										
Approach	326	6	332	23	355	301	5	306	26	332
Departure	326	6	332	23	355	301	5	306	26	332
Total	652	12	664	46	710	602	10	612	52	664

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
4 Chatham Lane/ Tioga Lane										
NBL	0	0	0	0	0	14	0	14	0	14
NBT	53	1	54	2	56	8	0	8	4	12
NBR	0	0	0	2	2	0	0	0	7	7
SBL	0	0	0	1	1	0	0	0	2	2
SBT	1	0	1	5	6	2	0	2	3	5
SBR	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0
EBR	3	0	3	0	3	1	0	1	0	1
WBL	0	0	0	7	7	0	0	0	5	5
WBT	3	0	3	0	3	0	0	0	0	0
WBR	0	0	0	2	2	0	0	0	2	2
North Leg										
Approach	1	0	1	6	7	2	0	2	5	7
Departure	53	1	54	4	58	8	0	8	6	14
Total	54	1	55	10	65	10	0	10	11	21
South Leg										
Approach	53	1	54	4	58	22	0	22	11	33
Departure	4	0	4	12	16	3	0	3	8	11
Total	57	1	58	16	74	25	0	25	19	44
East Leg										
Approach	3	0	3	9	12	0	0	0	7	7
Departure	0	0	0	3	3	0	0	0	9	9
Total	3	0	3	12	15	0	0	0	16	16
West Leg										
Approach	3	0	3	0	3	1	0	1	0	1
Departure	3	0	3	0	3	14	0	14	0	14
Total	6	0	6	0	6	15	0	15	0	15
Total Approaches										
Approach	60	1	61	19	80	25	0	25	23	48
Departure	60	1	61	19	80	25	0	25	23	48
Total	120	2	122	38	160	50	0	50	46	96

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
5 Driveway 2/ Tioga Lane										
NBL	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	14	14	0	0	0	9	9
SBT	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	9	9	0	0	0	6	6
EBL	0	0	0	3	3	0	0	0	9	9
EBT	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0
WBT	3	0	3	0	3	0	0	0	0	0
WBR	0	0	0	5	5	0	0	0	13	13
North Leg										
Approach	0	0	0	23	23	0	0	0	15	15
Departure	0	0	0	8	8	0	0	0	22	22
Total	0	0	0	31	31	0	0	0	37	37
South Leg										
Approach	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
East Leg										
Approach	3	0	3	5	8	0	0	0	13	13
Departure	0	0	0	14	14	0	0	0	9	9
Total	3	0	3	19	22	0	0	0	22	22
West Leg										
Approach	0	0	0	3	3	0	0	0	9	9
Departure	3	0	3	9	12	0	0	0	6	6
Total	3	0	3	12	15	0	0	0	15	15
Total Approaches										
Approach	3	0	3	31	34	0	0	0	37	37
Departure	3	0	3	31	34	0	0	0	37	37
Total	6	0	6	62	68	0	0	0	74	74

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
6 Antelope Road/ Tioga Lane										
NBL	1	0	1	5	6	0	0	0	13	13
NBT	117	2	119	4	123	0	0	0	11	11
NBR	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0
SBT	197	4	201	12	213	0	0	0	8	8
SBR	2	0	2	0	2	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	14	14	0	0	0	9	9
WBL	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0
North Leg										
Approach	199	4	203	12	215	0	0	0	8	8
Departure	117	2	119	4	123	0	0	0	11	11
Total	316	6	322	16	338	0	0	0	19	19
South Leg										
Approach	118	2	120	9	129	0	0	0	24	24
Departure	197	4	201	26	227	0	0	0	17	17
Total	315	6	321	35	356	0	0	0	41	41
East Leg										
Approach	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
West Leg										
Approach	0	0	0	14	14	0	0	0	9	9
Departure	3	0	3	5	8	0	0	0	13	13
Total	3	0	3	19	22	0	0	0	22	22
Total Approaches										
Approach	317	6	323	35	358	0	0	0	41	41
Departure	317	6	323	35	358	0	0	0	41	41
Total	634	12	646	70	716	0	0	0	82	82

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
7 Chatham Lane/ McCall Blvd										
NBL	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0
SBL	2	0	2	0	2	1	0	1	0	1
SBT	0	0	0	0	0	0	0	0	0	0
SBR	2	0	2	12	14	2	0	2	8	10
EBL	2	0	2	4	6	9	0	9	11	20
EBT	730	15	745	4	749	1,111	22	1133	11	1,144
EBR	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0
WBT	1,097	22	1119	12	1,131	705	14	719	8	727
WBR	49	1	50	0	50	1	0	1	0	1
North Leg										
Approach	4	0	4	12	16	3	0	3	8	11
Departure	51	1	52	4	56	10	0	10	11	21
Total	55	1	56	16	72	13	0	13	19	32
South Leg										
Approach	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
East Leg										
Approach	1,146	23	1,169	12	1,181	706	14	720	8	728
Departure	732	15	747	4	751	1,112	22	1,134	11	1,145
Total	1,878	38	1,916	16	1,932	1,818	36	1,854	19	1,873
West Leg										
Approach	732	15	747	8	755	1,120	22	1,142	22	1,164
Departure	1,099	22	1,121	24	1,145	707	14	721	16	737
Total	1,831	37	1,868	32	1,900	1,827	36	1,863	38	1,901
Total Approaches										
Approach	1,882	38	1,920	32	1,952	1,829	36	1,865	38	1,903
Departure	1,882	38	1,920	32	1,952	1,829	36	1,865	38	1,903
Total	3,764	76	3,840	64	3,904	3,658	72	3,730	76	3,806

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Table E-3 - Opening Year (2026) Peak Hour Volume Summary

	AM Peak Hour					PM Peak Hour				
	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips	Adjusted Exist Volumes	Growth	OY Without Project Trips	Project Trips	OY With Project Trips
8 Antelope Road/ McCall Blvd										
NBL	42	1	43	0	43	14	0	14	0	14
NBT	13	0	13	2	15	7	0	7	4	11
NBR	48	1	49	0	49	24	0	24	0	24
SBL	23	0	23	9	32	10	0	10	6	16
SBT	17	0	17	5	22	13	0	13	3	16
SBR	151	3	154	12	166	104	2	106	8	114
EBL	82	2	84	4	88	132	3	135	11	146
EBT	659	13	672	0	672	938	19	957	0	957
EBR	11	0	11	0	11	44	1	45	0	45
WBL	45	1	46	0	46	22	0	22	0	22
WBT	977	20	997	0	997	591	12	603	0	603
WBR	23	0	23	3	26	11	0	11	9	20
North Leg										
Approach	191	3	194	26	220	127	2	129	17	146
Departure	118	2	120	9	129	150	3	153	24	177
Total	309	5	314	35	349	277	5	282	41	323
South Leg										
Approach	103	2	105	2	107	45	0	45	4	49
Departure	73	1	74	5	79	79	1	80	3	83
Total	176	3	179	7	186	124	1	125	7	132
East Leg										
Approach	1,045	21	1,066	3	1,069	624	12	636	9	645
Departure	730	14	744	9	753	972	19	991	6	997
Total	1,775	35	1,810	12	1,822	1,596	31	1,627	15	1,642
West Leg										
Approach	752	15	767	4	771	1,114	23	1,137	11	1,148
Departure	1,170	24	1,194	12	1,206	709	14	723	8	731
Total	1,922	39	1,961	16	1,977	1,823	37	1,860	19	1,879
Total Approaches										
Approach	2,091	41	2,132	35	2,167	1,910	37	1,947	41	1,988
Departure	2,091	41	2,132	35	2,167	1,910	37	1,947	41	1,988
Total	4,182	82	4,264	70	4,334	3,820	74	3,894	82	3,976

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
1 . Chatham Lane/ Chambers Avenue												
NBL	52	1	0	53	2	55	3	0	0	3	2	5
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	2	2	0	0	0	0	4	4
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	1	1	1	2	0	0	2	2	2	4
EBR	1	0	0	1	1	2	3	0	0	3	2	5
WBL	0	0	0	0	5	5	0	0	0	0	3	3
WBT	7	0	1	8	2	10	0	0	2	2	2	4
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	52	1	0	53	4	57	3	0	0	3	6	9
Departure	1	0	0	1	6	7	3	0	0	3	5	8
Total	53	1	0	54	10	64	6	0	0	6	11	17
East Leg												
Approach	7	0	1	8	7	15	0	0	2	2	5	7
Departure	0	0	1	1	3	4	0	0	2	2	6	8
Total	7	0	2	9	10	19	0	0	4	4	11	15
West Leg												
Approach	1	0	1	2	2	4	3	0	2	5	4	9
Departure	59	1	1	61	4	65	3	0	2	5	4	9
Total	60	1	2	63	6	69	6	0	4	10	8	18
Total Approaches												
Approach	60	1	2	63	13	76	6	0	4	10	15	25
Departure	60	1	2	63	13	76	6	0	4	10	15	25
Total	120	2	4	126	26	152	12	0	8	20	30	50

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
2 Driveway 1/ Chambers Avenue												
NBL	0	0	0	0	7	7	0	0	0	0	5	5
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	16	16	0	0	0	0	11	11
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	1	1	0	1	0	0	2	2	0	2
EBR	0	0	0	0	2	2	0	0	0	0	7	7
WBL	0	0	0	0	6	6	0	0	0	0	15	15
WBT	7	0	1	8	0	8	0	0	2	2	0	2
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	0	0	0	0	23	23	0	0	0	0	16	16
Departure	0	0	0	0	8	8	0	0	0	0	22	22
Total	0	0	0	0	31	31	0	0	0	0	38	38
East Leg												
Approach	7	0	1	8	6	14	0	0	2	2	15	17
Departure	0	0	1	1	16	17	0	0	2	2	11	13
Total	7	0	2	9	22	31	0	0	4	4	26	30
West Leg												
Approach	0	0	1	1	2	3	0	0	2	2	7	9
Departure	7	0	1	8	7	15	0	0	2	2	5	7
Total	7	0	2	9	9	18	0	0	4	4	12	16
Total Approaches												
Approach	7	0	2	9	31	40	0	0	4	4	38	42
Departure	7	0	2	9	31	40	0	0	4	4	38	42
Total	14	0	4	18	62	80	0	0	8	8	76	84

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
3 Antelope Road/ Chambers Avenue												
NBL	1	0	3	4	4	8	0	0	6	6	11	17
NBT	108	2	100	210	0	210	163	3	129	295	0	295
NBR	9	0	5	14	0	14	8	0	6	14	0	14
SBL	0	0	22	22	0	22	1	0	42	43	0	43
SBT	187	4	90	281	0	281	124	2	143	269	0	269
SBR	6	0	3	9	2	11	0	0	5	5	4	9
EBL	0	0	1	1	5	6	0	0	1	1	3	4
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	1	1	12	13	0	0	2	2	8	10
WBL	14	0	9	23	0	23	5	0	9	14	0	14
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	1	0	30	31	0	31	0	0	41	41	0	41
North Leg												
Approach	193	4	115	312	2	314	125	2	190	317	4	321
Departure	109	2	131	242	5	247	163	3	171	337	3	340
Total	302	6	246	554	7	561	288	5	361	654	7	661
South Leg												
Approach	118	2	108	228	4	232	171	3	141	315	11	326
Departure	201	4	100	305	12	317	129	2	154	285	8	293
Total	319	6	208	533	16	549	300	5	295	600	19	619
East Leg												
Approach	15	0	39	54	0	54	5	0	50	55	0	55
Departure	9	0	27	36	0	36	9	0	48	57	0	57
Total	24	0	66	90	0	90	14	0	98	112	0	112
West Leg												
Approach	0	0	2	2	17	19	0	0	3	3	11	14
Departure	7	0	6	13	6	19	0	0	11	11	15	26
Total	7	0	8	15	23	38	0	0	14	14	26	40
Total Approaches												
Approach	326	6	264	596	23	619	301	5	384	690	26	716
Departure	326	6	264	596	23	619	301	5	384	690	26	716
Total	652	12	528	1,192	46	1,238	602	10	768	1,380	52	1,432

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
4 Chatham Lane/ Tioga Lane												
NBL	0	0	1	1	0	1	14	0	2	16	0	16
NBT	53	1	0	54	2	56	8	0	0	8	4	12
NBR	0	0	0	0	2	2	0	0	0	0	7	7
SBL	0	0	0	0	1	1	0	0	0	0	2	2
SBT	1	0	0	1	5	6	2	0	0	2	3	5
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	3	0	1	4	0	4	1	0	2	3	0	3
WBL	0	0	0	0	7	7	0	0	0	0	5	5
WBT	3	0	0	3	0	3	0	0	0	0	0	0
WBR	0	0	0	0	2	2	0	0	0	0	2	2
North Leg												
Approach	1	0	0	1	6	7	2	0	0	2	5	7
Departure	53	1	0	54	4	58	8	0	0	8	6	14
Total	54	1	0	55	10	65	10	0	0	10	11	21
South Leg												
Approach	53	1	1	55	4	59	22	0	2	24	11	35
Departure	4	0	1	5	12	17	3	0	2	5	8	13
Total	57	1	2	60	16	76	25	0	4	29	19	48
East Leg												
Approach	3	0	0	3	9	12	0	0	0	0	7	7
Departure	0	0	0	0	3	3	0	0	0	0	9	9
Total	3	0	0	3	12	15	0	0	0	0	16	16
West Leg												
Approach	3	0	1	4	0	4	1	0	2	3	0	3
Departure	3	0	1	4	0	4	14	0	2	16	0	16
Total	6	0	2	8	0	8	15	0	4	19	0	19
Total Approaches												
Approach	60	1	2	63	19	82	25	0	4	29	23	52
Departure	60	1	2	63	19	82	25	0	4	29	23	52
Total	120	2	4	126	38	164	50	0	8	58	46	104

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
5 Driveway 2/ Tioga Lane												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	1	1	14	15	0	0	2	2	9	11
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	9	9	0	0	0	0	6	6
EBL	0	0	0	0	3	3	0	0	0	0	9	9
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	3	0	0	3	0	3	0	0	0	0	0	0
WBR	0	0	1	1	5	6	0	0	2	2	13	15
North Leg												
Approach	0	0	1	1	23	24	0	0	2	2	15	17
Departure	0	0	1	1	8	9	0	0	2	2	22	24
Total	0	0	2	2	31	33	0	0	4	4	37	41
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	3	0	1	4	5	9	0	0	2	2	13	15
Departure	0	0	1	1	14	15	0	0	2	2	9	11
Total	3	0	2	5	19	24	0	0	4	4	22	26
West Leg												
Approach	0	0	0	0	3	3	0	0	0	0	9	9
Departure	3	0	0	3	9	12	0	0	0	0	6	6
Total	3	0	0	3	12	15	0	0	0	0	15	15
Total Approaches												
Approach	3	0	2	5	31	36	0	0	4	4	37	41
Departure	3	0	2	5	31	36	0	0	4	4	37	41
Total	6	0	4	10	62	72	0	0	8	8	74	82

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
6 Antelope Road/ Tioga Lane												
NBL	1	0	1	2	5	7	0	0	2	2	13	15
NBT	117	2	116	235	4	239	0	0	166	166	11	177
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	197	4	99	300	12	312	0	0	154	154	8	162
SBR	2	0	0	2	0	2	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	1	1	14	15	0	0	2	2	9	11
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	199	4	99	302	12	314	0	0	154	154	8	162
Departure	117	2	116	235	4	239	0	0	166	166	11	177
Total	316	6	215	537	16	553	0	0	320	320	19	339
South Leg												
Approach	118	2	117	237	9	246	0	0	168	168	24	192
Departure	197	4	100	301	26	327	0	0	156	156	17	173
Total	315	6	217	538	35	573	0	0	324	324	41	365
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
West Leg												
Approach	0	0	1	1	14	15	0	0	2	2	9	11
Departure	3	0	1	4	5	9	0	0	2	2	13	15
Total	3	0	2	5	19	24	0	0	4	4	22	26
Total Approaches												
Approach	317	6	217	540	35	575	0	0	324	324	41	365
Departure	317	6	217	540	35	575	0	0	324	324	41	365
Total	634	12	434	1,080	70	1,150	0	0	648	648	82	730

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
7 Chatham Lane/ McCall Blvd												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	2	0	1	3	0	3	1	0	2	3	0	3
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	2	0	5	7	12	19	2	0	5	7	8	15
EBL	2	0	4	6	4	10	9	0	5	14	11	25
EBT	730	15	174	919	4	923	1,111	22	329	1462	11	1,473
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	1,097	22	222	1341	12	1,353	705	14	289	1008	8	1,016
WBR	49	1	1	51	0	51	1	0	2	3	0	3
North Leg												
Approach	4	0	6	10	12	22	3	0	7	10	8	18
Departure	51	1	5	57	4	61	10	0	7	17	11	28
Total	55	1	11	67	16	83	13	0	14	27	19	46
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	1,146	23	223	1,392	12	1,404	706	14	291	1,011	8	1,019
Departure	732	15	175	922	4	926	1,112	22	331	1,465	11	1,476
Total	1,878	38	398	2,314	16	2,330	1,818	36	622	2,476	19	2,495
West Leg												
Approach	732	15	178	925	8	933	1,120	22	334	1,476	22	1,498
Departure	1,099	22	227	1,348	24	1,372	707	14	294	1,015	16	1,031
Total	1,831	37	405	2,273	32	2,305	1,827	36	628	2,491	38	2,529
Total Approaches												
Approach	1,882	38	407	2,327	32	2,359	1,829	36	632	2,497	38	2,535
Departure	1,882	38	407	2,327	32	2,359	1,829	36	632	2,497	38	2,535
Total	3,764	76	814	4,654	64	4,718	3,658	72	1,264	4,994	76	5,070

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Table E-4 - Opening Year (2026) Cumulative Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips	Adjusted Exist Volumes	Growth	Cumulativ Project Trips	OY Cumul Without Project Trips	Project Trips	OY Cumul With Project Trips
8 Antelope Road/ McCall Blvd												
NBL	42	1	7	50	0	50	14	0	7	21	0	21
NBT	13	0	14	27	2	29	7	0	6	13	4	17
NBR	48	1	12	61	0	61	24	0	23	47	0	47
SBL	23	0	14	37	9	46	10	0	23	33	6	39
SBT	17	0	5	22	5	27	13	0	13	26	3	29
SBR	151	3	39	193	12	205	104	2	36	142	8	150
EBL	82	2	95	179	4	183	132	3	169	304	11	315
EBT	659	13	91	763	0	763	938	19	174	1131	0	1,131
EBR	11	0	6	17	0	17	44	1	7	52	0	52
WBL	45	1	7	53	0	53	22	0	25	47	0	47
WBT	977	20	190	1187	0	1,187	591	12	268	871	0	871
WBR	23	0	26	49	3	52	11	0	42	53	9	62
North Leg												
Approach	191	3	58	252	26	278	127	2	72	201	17	218
Departure	118	2	135	255	9	264	150	3	217	370	24	394
Total	309	5	193	507	35	542	277	5	289	571	41	612
South Leg												
Approach	103	2	33	138	2	140	45	0	36	81	4	85
Departure	73	1	18	92	5	97	79	1	45	125	3	128
Total	176	3	51	230	7	237	124	1	81	206	7	213
East Leg												
Approach	1,045	21	223	1,289	3	1,292	624	12	335	971	9	980
Departure	730	14	117	861	9	870	972	19	220	1,211	6	1,217
Total	1,775	35	340	2,150	12	2,162	1,596	31	555	2,182	15	2,197
West Leg												
Approach	752	15	192	959	4	963	1,114	23	350	1,487	11	1,498
Departure	1,170	24	236	1,430	12	1,442	709	14	311	1,034	8	1,042
Total	1,922	39	428	2,389	16	2,405	1,823	37	661	2,521	19	2,540
Total Approaches												
Approach	2,091	41	506	2,638	35	2,673	1,910	37	793	2,740	41	2,781
Departure	2,091	41	506	2,638	35	2,673	1,910	37	793	2,740	41	2,781
Total	4,182	82	1,012	5,276	70	5,346	3,820	74	1,586	5,480	82	5,562

Table E-5: Existing Roadway Segment Volume Summary

Roadway Segment	Without Project					Daily Project Trips	Existing With Project	
	Exist Daily Pass. Veh.	Exist Daily Trucks	Exist Daily Total Vehicles	Exist Daily Truck PCEs	Exist Daily PCE Volumes		Exist With Project Total Vehicles	Exist With Project Total PCEs
1 . Antelope Road between Chambers Avenue and McCall Boulevard	1,745	55	1,800	97	1,842	524	2,324	2,366

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Table E-6: Opening Year Roadway Segment Volume Summary

Roadway Segment	Existing Daily PCE Volumes	Growth	OY Without Project Trips	Daily Project Trips	OY With Project Trips
1 . Antelope Road between Chambers Avenue and McCall Boulevard	1,842	37	1,879	524	2,403

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Table E-7: Opening Year Cumulative Roadway Segment Volume Summary

Roadway Segment	Existing Daily PCE Volumes	Growth	OY Without Project Trips	Cumul. Project Trips	OY Cumul Without Project trips	Daily Project Trips	OY With Project
1 . Antelope Road between Chambers Avenue and McCall Boulevard	1,842	37	1,879	13,751	15,630	524	16,154

APPENDIX F:
Level of Service Worksheets

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	1	108	9	0	193
Future Vol, veh/h	14	1	108	9	0	193
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	-	-	-	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	18	1	137	11	0	244

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	387	74	0	0	148	0
Stage 1	142	-	-	-	-	-
Stage 2	244	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	603	973	-	-	1432	-
Stage 1	870	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	603	973	-	-	1432	-
Mov Cap-2 Maneuver	603	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	11.01	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	618	1432	-
HCM Lane V/C Ratio	-	-	0.031	-	-
HCM Control Delay (s/veh)	-	-	11	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	3	60	1	0
Future Vol, veh/h	0	3	3	60	1	0
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	56	56	56	56	56	56
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	5	107	2	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	120	2	2	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	876	1083	1621	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	873	1083	1621	-	-	-
Mov Cap-2 Maneuver	873	-	-	-	-	-
Stage 1	1018	-	-	-	-	-
Stage 2	907	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.34	0.34	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	86	-	1083	-	-
HCM Lane V/C Ratio	0.003	-	0.005	-	-
HCM Control Delay (s/veh)	7.2	0	8.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	730	1097	59	2	2
Future Vol, veh/h	2	730	1097	59	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	793	1192	64	2	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1257	0	-	0	1626	628
Stage 1	-	-	-	-	1224	-
Stage 2	-	-	-	-	401	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	549	-	-	-	93	426
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	549	-	-	-	93	426
Mov Cap-2 Maneuver	-	-	-	-	93	-
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	645	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.03	0	29.34
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	549	-	-	-	152
HCM Lane V/C Ratio	0.004	-	-	-	0.029
HCM Control Delay (s/veh)	11.6	-	-	-	29.3
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	659	11	45	977	23	44	11	48	23	17	159
Future Volume (veh/h)	82	659	11	45	977	23	44	11	48	23	17	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	87	701	12	48	1039	24	47	12	51	24	18	169
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	1437	25	131	1364	32	130	99	421	101	565	624
Arrive On Green	0.09	0.40	0.40	0.07	0.38	0.38	0.07	0.32	0.32	0.06	0.30	0.30
Sat Flow, veh/h	1781	3575	61	1781	3550	82	1781	311	1322	1781	1870	1585
Grp Volume(v), veh/h	87	348	365	48	520	543	47	0	63	24	18	169
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1856	1781	0	1632	1781	1870	1585
Q Serve(g_s), s	3.1	9.8	9.8	1.7	17.1	17.1	1.7	0.0	1.8	0.9	0.5	0.6
Cycle Q Clear(g_c), s	3.1	9.8	9.8	1.7	17.1	17.1	1.7	0.0	1.8	0.9	0.5	0.6
Prop In Lane	1.00		0.03	1.00		0.04	1.00		0.81	1.00		1.00
Lane Grp Cap(c), veh/h	163	714	747	131	683	713	130	0	520	101	565	624
V/C Ratio(X)	0.53	0.49	0.49	0.37	0.76	0.76	0.36	0.00	0.12	0.24	0.03	0.27
Avail Cap(c_a), veh/h	263	939	983	188	865	903	188	0	520	188	565	624
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	14.9	14.9	29.6	18.0	18.0	29.6	0.0	16.2	30.3	16.5	6.0
Incr Delay (d2), s/veh	2.7	0.5	0.5	1.7	3.1	2.9	1.7	0.0	0.5	1.2	0.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.3	3.4	0.7	6.2	6.5	0.8	0.0	0.7	0.4	0.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.8	15.5	15.4	31.3	21.1	21.0	31.3	0.0	16.7	31.5	16.6	7.1
LnGrp LOS	C	B	B	C	C	C	C		B	C	B	A
Approach Vol, veh/h		800			1111			110			211	
Approach Delay, s/veh		17.2			21.5			22.9			10.7	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	23.9	7.5	29.5	7.4	22.8	8.7	28.3
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	5.1	18.3	5.1	33.5	5.1	18.3	7.9	30.7
Max Q Clear Time (g_c+I1), s	2.9	3.8	3.7	11.8	3.7	2.6	5.1	19.1
Green Ext Time (p_c), s	0.0	0.2	0.0	3.8	0.0	0.5	0.0	4.7

Intersection Summary		
HCM 7th Control Delay, s/veh		19.0
HCM 7th LOS		B

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	163	8	1	124
Future Vol, veh/h	5	0	163	8	1	124
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	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	175	9	1	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	315	92	0	0	184	0
Stage 1	180	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	665	948	-	-	1390	-
Stage 1	834	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	665	948	-	-	1390	-
Mov Cap-2 Maneuver	665	-	-	-	-	-
Stage 1	834	-	-	-	-	-
Stage 2	890	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	10.46	0	0.06
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	665	1390	-
HCM Lane V/C Ratio	-	-	0.008	0.001	-
HCM Control Delay (s/veh)	-	-	10.5	7.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	14	8	2	0
Future Vol, veh/h	0	1	14	8	2	0
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	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	21	12	3	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	57	3	3	0	-	0
Stage 1	3	-	-	-	-	-
Stage 2	54	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	951	1081	1619	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	969	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	938	1081	1619	-	-	-
Mov Cap-2 Maneuver	938	-	-	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.34	4.62	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1145	-	1081	-	-
HCM Lane V/C Ratio	0.013	-	0.001	-	-
HCM Control Delay (s/veh)	7.3	0	8.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

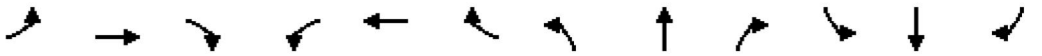
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	1111	705	1	1	2
Future Vol, veh/h	9	1111	705	1	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	1145	727	1	1	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	728	0	-	0	1319	364
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	591	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	871	-	-	-	149	633
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	871	-	-	-	147	633
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	516	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.07	0	17.08
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	871	-	-	-	301
HCM Lane V/C Ratio	0.011	-	-	-	0.01
HCM Control Delay (s/veh)	9.2	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	938	44	22	591	11	14	7	24	10	13	104
Future Volume (veh/h)	132	938	44	22	591	11	14	7	24	10	13	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	136	967	45	23	609	11	14	7	25	10	13	107
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	1325	62	104	1119	20	88	127	454	80	654	758
Arrive On Green	0.13	0.38	0.38	0.06	0.31	0.31	0.05	0.35	0.35	0.04	0.35	0.35
Sat Flow, veh/h	1781	3457	161	1781	3571	64	1781	359	1281	1781	1870	1585
Grp Volume(v), veh/h	136	497	515	23	303	317	14	0	32	10	13	107
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1859	1781	0	1640	1781	1870	1585
Q Serve(g_s), s	4.5	15.0	15.0	0.8	8.8	8.8	0.5	0.0	0.8	0.3	0.3	1.5
Cycle Q Clear(g_c), s	4.5	15.0	15.0	0.8	8.8	8.8	0.5	0.0	0.8	0.3	0.3	1.5
Prop In Lane	1.00		0.09	1.00		0.03	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	228	681	706	104	557	582	88	0	581	80	654	758
V/C Ratio(X)	0.60	0.73	0.73	0.22	0.54	0.54	0.16	0.00	0.06	0.13	0.02	0.14
Avail Cap(c_a), veh/h	412	950	985	213	752	786	202	0	581	202	654	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	16.5	16.5	28.1	17.8	17.8	28.5	0.0	13.3	28.7	13.3	3.6
Incr Delay (d2), s/veh	2.5	1.8	1.7	1.1	0.8	0.8	0.8	0.0	0.2	0.7	0.1	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.1	5.3	0.3	3.1	3.2	0.2	0.0	0.3	0.1	0.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.2	18.3	18.3	29.2	18.6	18.6	29.4	0.0	13.5	29.4	13.4	4.0
LnGrp LOS	C	B	B	C	B	B	C		B	C	B	A
Approach Vol, veh/h		1148			643			46			130	
Approach Delay, s/veh		19.5			19.0			18.3			6.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	24.7	6.1	26.5	5.6	24.4	10.5	22.1
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	5.1	19.9	5.5	31.5	5.1	19.9	12.5	24.5
Max Q Clear Time (g_c+I1), s	2.3	2.8	2.8	17.0	2.5	3.5	6.5	10.8
Green Ext Time (p_c), s	0.0	0.1	0.0	5.0	0.0	0.3	0.1	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	18.5
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	2	5	9	55	2
Future Vol, veh/h	1	2	5	9	55	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	5	9	58	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	3	0	22	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1619	-	994	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1003	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1619	-	991	1082
Mov Cap-2 Maneuver	-	-	-	-	991	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	999	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.58	8.85
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	643	-
HCM Lane V/C Ratio	0.06	-	-	0.003	-
HCM Control Delay (s/veh)	8.9	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	2	6	7	7	16
Future Vol, veh/h	0	2	6	7	7	16
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	6	7	7	17

Major/Minor	Minor2		Major2	
Conflicting Flow All	20	7	0	0
Stage 1	20	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	874	1075	-	-
Stage 1	879	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1075	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v	8.36	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	1075	-	-
HCM Lane V/C Ratio	0.002	-	-
HCM Control Delay (s/veh)	8.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	12	14	0	1	5	108	9	0	191	8
Future Vol, veh/h	5	0	12	14	0	1	5	108	9	0	191	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	5	0	13	15	0	1	5	114	9	0	201	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	273	339	205	330	338	62	209	0	0	123	0	0
Stage 1	205	205	-	129	129	-	-	-	-	-	-	-
Stage 2	67	134	-	201	209	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	669	582	835	611	582	991	1360	-	-	1463	-	-
Stage 1	796	731	-	862	789	-	-	-	-	-	-	-
Stage 2	935	785	-	800	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	666	579	835	600	580	991	1360	-	-	1463	-	-
Mov Cap-2 Maneuver	666	579	-	600	580	-	-	-	-	-	-	-
Stage 1	796	731	-	858	786	-	-	-	-	-	-	-
Stage 2	931	782	-	788	728	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.75	11	0.34	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	133	-	-	777	616	1463	-	-
HCM Lane V/C Ratio	0.004	-	-	0.023	0.026	-	-	-
HCM Control Delay (s/veh)	7.7	0	-	9.7	11	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	3	7	3	2	0	55	2	1	6	0
Future Vol, veh/h	0	0	3	7	3	2	0	55	2	1	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	3	7	3	2	0	58	2	1	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	68	68	6	67	67	59	6	0	0	60	0	0
Stage 1	8	8	-	59	59	-	-	-	-	-	-	-
Stage 2	59	60	-	8	8	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	925	822	1076	925	823	1007	1615	-	-	1544	-	-
Stage 1	1013	889	-	953	846	-	-	-	-	-	-	-
Stage 2	952	845	-	1013	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	919	822	1076	922	823	1007	1615	-	-	1544	-	-
Mov Cap-2 Maneuver	919	822	-	922	823	-	-	-	-	-	-	-
Stage 1	1012	888	-	953	846	-	-	-	-	-	-	-
Stage 2	947	845	-	1009	888	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.35	9.02	0	1.05
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1615	-	-	1076	907	257	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.014	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	8.4	9	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	3	5	14	9
Future Vol, veh/h	3	0	3	5	14	9
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	3	5	15	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	8	0	-	0	12	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1612	-	-	-	1007	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1017	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1612	-	-	-	1005	1077
Mov Cap-2 Maneuver	-	-	-	-	1005	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.24	0	8.57
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1612	-	-	-	1032
HCM Lane V/C Ratio	0.002	-	-	-	0.023
HCM Control Delay (s/veh)	7.2	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	6	5	6	2
Future Vol, veh/h	0	14	6	5	6	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	6	5	6	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	7	8	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	1075	1611	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1075	1611	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.4	3.95	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1609	-	1075	-	-
HCM Lane V/C Ratio	0.004	-	0.014	-	-
HCM Control Delay (s/veh)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

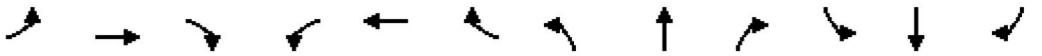
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	734	1109	49	2	14
Future Vol, veh/h	6	734	1109	49	2	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	0	-	-	-	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	6	773	1167	52	2	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1219	0	-	0	1592	609
Stage 1	-	-	-	-	1193	-
Stage 2	-	-	-	-	399	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	568	-	-	-	98	438
Stage 1	-	-	-	-	250	-
Stage 2	-	-	-	-	647	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	568	-	-	-	97	438
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	647	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.09	0	17.53
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	568	-	-	-	304
HCM Lane V/C Ratio	0.011	-	-	-	0.055
HCM Control Delay (s/veh)	11.4	-	-	-	17.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	659	11	45	977	26	42	15	48	32	22	163
Future Volume (veh/h)	86	659	11	45	977	26	42	15	48	32	22	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	91	694	12	47	1028	27	44	16	51	34	23	172
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	168	1442	25	131	1353	36	127	122	387	115	566	629
Arrive On Green	0.09	0.40	0.40	0.07	0.38	0.38	0.07	0.31	0.31	0.06	0.30	0.30
Sat Flow, veh/h	1781	3574	62	1781	3538	93	1781	393	1252	1781	1870	1585
Grp Volume(v), veh/h	91	345	361	47	516	539	44	0	67	34	23	172
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1854	1781	0	1645	1781	1870	1585
Q Serve(g_s), s	3.3	9.6	9.6	1.7	17.0	17.0	1.6	0.0	2.0	1.2	0.6	0.6
Cycle Q Clear(g_c), s	3.3	9.6	9.6	1.7	17.0	17.0	1.6	0.0	2.0	1.2	0.6	0.6
Prop In Lane	1.00		0.03	1.00		0.05	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	168	717	750	131	679	709	127	0	509	115	566	629
V/C Ratio(X)	0.54	0.48	0.48	0.36	0.76	0.76	0.35	0.00	0.13	0.29	0.04	0.27
Avail Cap(c_a), veh/h	263	940	984	189	866	904	189	0	509	189	566	629
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	14.8	14.8	29.6	18.0	18.0	29.6	0.0	16.7	29.9	16.5	6.0
Incr Delay (d2), s/veh	2.7	0.5	0.5	1.7	3.0	2.9	1.6	0.0	0.5	1.4	0.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.2	3.4	0.7	6.2	6.4	0.7	0.0	0.8	0.5	0.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.7	15.3	15.3	31.3	21.0	20.9	31.3	0.0	17.2	31.3	16.7	7.0
LnGrp LOS	C	B	B	C	C	C	C		B	C	B	A
Approach Vol, veh/h		797			1102			111			229	
Approach Delay, s/veh		17.2			21.4			22.8			11.6	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	23.3	7.4	29.6	7.3	22.8	8.8	28.2
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	5.1	18.3	5.1	33.5	5.1	18.3	7.9	30.7
Max Q Clear Time (g_c+I1), s	3.2	4.0	3.7	11.6	3.6	2.6	5.3	19.0
Green Ext Time (p_c), s	0.0	0.2	0.0	3.7	0.0	0.5	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	19.0
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	5	3	2	5	4
Future Vol, veh/h	2	5	3	2	5	4
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	5	3	2	5	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	13	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1613	-	1006	1078
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1613	-	1004	1078
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1013	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	4.34	8.51
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1036	-	-	1080	-
HCM Lane V/C Ratio	0.009	-	-	0.002	-
HCM Control Delay (s/veh)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	7	15	0	5	11
Future Vol, veh/h	0	7	15	0	5	11
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	16	0	5	12

Major/Minor	Minor2		Major2	
Conflicting Flow All	32	0	0	0
Stage 1	32	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	861	-	-	-
Stage 1	869	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	-	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕		↰	↕	
Traffic Vol, veh/h	3	0	8	5	0	0	11	163	8	1	124	4
Future Vol, veh/h	3	0	8	5	0	0	11	163	8	1	124	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	3	0	8	5	0	0	12	172	8	1	131	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	244	338	133	332	336	90	135	0	0	180	0	0
Stage 1	135	135	-	199	199	-	-	-	-	-	-	-
Stage 2	109	203	-	133	137	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	700	583	916	610	584	950	1449	-	-	1394	-	-
Stage 1	868	784	-	785	736	-	-	-	-	-	-	-
Stage 2	885	733	-	870	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	694	577	916	599	579	950	1449	-	-	1394	-	-
Mov Cap-2 Maneuver	694	577	-	599	579	-	-	-	-	-	-	-
Stage 1	867	784	-	778	730	-	-	-	-	-	-	-
Stage 2	878	727	-	862	782	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.33	11.07	0.5	0.06
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	204	-	-	842	599	1394	-	-
HCM Lane V/C Ratio	0.008	-	-	0.014	0.009	0.001	-	-
HCM Control Delay (s/veh)	7.5	0.1	-	9.3	11.1	7.6	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	1	5	0	2	14	12	7	2	5	0
Future Vol, veh/h	0	0	1	5	0	2	14	12	7	2	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	1	5	0	2	15	13	7	2	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	52	59	5	55	55	16	5	0	0	20	0	0
Stage 1	9	9	-	46	46	-	-	-	-	-	-	-
Stage 2	42	49	-	9	9	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	948	832	1078	942	836	1063	1616	-	-	1596	-	-
Stage 1	1012	888	-	968	857	-	-	-	-	-	-	-
Stage 2	972	854	-	1012	888	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	936	823	1078	932	827	1063	1616	-	-	1596	-	-
Mov Cap-2 Maneuver	936	823	-	932	827	-	-	-	-	-	-	-
Stage 1	1010	887	-	959	849	-	-	-	-	-	-	-
Stage 2	961	846	-	1009	887	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.34	8.76	3.08	2.07
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	711	-	-	1078	966	514	-	-
HCM Lane V/C Ratio	0.009	-	-	0.001	0.008	0.001	-	-
HCM Control Delay (s/veh)	7.2	0	-	8.3	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	0	0	13	9	6
Future Vol, veh/h	9	0	0	13	9	6
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	0	14	9	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	14	0	-	0	26	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	19	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1605	-	-	-	990	1076
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1004	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1605	-	-	-	984	1076
Mov Cap-2 Maneuver	-	-	-	-	984	-
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	1004	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.26	0	8.59
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1605	-	-	-	1019
HCM Lane V/C Ratio	0.006	-	-	-	0.016
HCM Control Delay (s/veh)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	13	11	8	0
Future Vol, veh/h	0	9	13	11	8	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	14	12	8	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	8	8	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	1073	1611	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1073	1611	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.38	3.94	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1606	-	1073	-	-
HCM Lane V/C Ratio	0.008	-	0.009	-	-
HCM Control Delay (s/veh)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

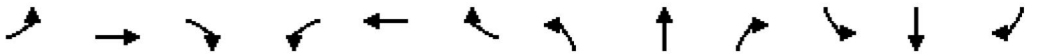
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1122	713	1	1	10
Future Vol, veh/h	20	1122	713	1	1	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	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	1157	735	1	1	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	736	0	-	0	1355	368
Stage 1	-	-	-	-	736	-
Stage 2	-	-	-	-	620	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	865	-	-	-	141	629
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	499	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	865	-	-	-	137	629
Mov Cap-2 Maneuver	-	-	-	-	137	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	499	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.16	0	12.77
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	865	-	-	-	474
HCM Lane V/C Ratio	0.024	-	-	-	0.024
HCM Control Delay (s/veh)	9.3	-	-	-	12.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	938	44	22	591	20	14	11	24	16	16	112
Future Volume (veh/h)	143	938	44	22	591	20	14	11	24	16	16	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	147	967	45	23	609	21	14	11	25	16	16	115
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	1324	62	104	1071	37	91	177	402	91	652	767
Arrive On Green	0.14	0.38	0.38	0.06	0.31	0.31	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	3457	161	1781	3505	121	1781	508	1155	1781	1870	1585
Grp Volume(v), veh/h	147	497	515	23	309	321	14	0	36	16	16	115
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1849	1781	0	1663	1781	1870	1585
Q Serve(g_s), s	4.9	15.1	15.1	0.8	9.2	9.2	0.5	0.0	0.9	0.5	0.4	1.5
Cycle Q Clear(g_c), s	4.9	15.1	15.1	0.8	9.2	9.2	0.5	0.0	0.9	0.5	0.4	1.5
Prop In Lane	1.00		0.09	1.00		0.07	1.00		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	241	680	705	104	543	565	91	0	580	91	652	767
V/C Ratio(X)	0.61	0.73	0.73	0.22	0.57	0.57	0.15	0.00	0.06	0.18	0.02	0.15
Avail Cap(c_a), veh/h	411	948	982	213	750	780	201	0	580	201	652	767
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	16.6	16.6	28.2	18.3	18.3	28.5	0.0	13.6	28.5	13.4	3.5
Incr Delay (d2), s/veh	2.5	1.8	1.7	1.1	0.9	0.9	0.8	0.0	0.2	0.9	0.1	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	5.1	5.3	0.3	3.3	3.4	0.2	0.0	0.3	0.2	0.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.1	18.4	18.3	29.3	19.3	19.2	29.3	0.0	13.8	29.4	13.5	3.9
LnGrp LOS	C	B	B	C	B	B	C		B	C	B	A
Approach Vol, veh/h		1159			653			50			147	
Approach Delay, s/veh		19.6			19.6			18.2			7.7	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	24.4	6.2	26.5	5.7	24.4	11.0	21.7
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	5.1	19.9	5.5	31.5	5.1	19.9	12.5	24.5
Max Q Clear Time (g_c+I1), s	2.5	2.9	2.8	17.1	2.5	3.5	6.9	11.2
Green Ext Time (p_c), s	0.0	0.1	0.0	5.0	0.0	0.3	0.2	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	18.7
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	7.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	7	53	0
Future Vol, veh/h	0	1	0	7	53	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	7	56	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	8	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	1013	1084
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1016	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1622	-	1013	1084
Mov Cap-2 Maneuver	-	-	-	-	1013	-
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1016	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	8.76
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1013	-	-	1622	-
HCM Lane V/C Ratio	0.055	-	-	-	-
HCM Control Delay (s/veh)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	7	0	0
Future Vol, veh/h	0	0	0	7	0	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	7	7	0	0
Stage 1	7	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	888	1075	-	-
Stage 1	890	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1075	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	0	0	-
HCM Lane LOS	A	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	14	0	1	1	110	9	0	191	6
Future Vol, veh/h	0	0	0	14	0	1	1	110	9	0	191	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	0	0	0	15	0	1	1	116	9	0	201	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	264	332	204	324	330	63	207	0	0	125	0	0
Stage 1	204	204	-	123	123	-	-	-	-	-	-	-
Stage 2	60	127	-	201	207	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	678	587	836	617	589	989	1362	-	-	1460	-	-
Stage 1	797	732	-	869	794	-	-	-	-	-	-	-
Stage 2	945	790	-	800	730	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	677	587	836	617	588	989	1362	-	-	1460	-	-
Mov Cap-2 Maneuver	677	587	-	617	588	-	-	-	-	-	-	-
Stage 1	797	732	-	868	793	-	-	-	-	-	-	-
Stage 2	943	790	-	800	730	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	10.83	0.07	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	27	-	-	-	633	1460	-	-
HCM Lane V/C Ratio	0.001	-	-	-	0.025	-	-	-
HCM Control Delay (s/veh)	7.6	0	-	0	10.8	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	3	0	3	0	0	54	0	0	1	0
Future Vol, veh/h	0	0	3	0	3	0	0	54	0	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	3	0	3	0	0	57	0	0	1	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	59	58	1	58	58	57	1	0	0	57	0	0
Stage 1	1	1	-	57	57	-	-	-	-	-	-	-
Stage 2	58	57	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	936	833	1084	939	833	1009	1622	-	-	1548	-	-
Stage 1	1022	895	-	955	848	-	-	-	-	-	-	-
Stage 2	953	848	-	1022	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	933	833	1084	936	833	1009	1622	-	-	1548	-	-
Mov Cap-2 Maneuver	933	833	-	936	833	-	-	-	-	-	-	-
Stage 1	1022	895	-	955	848	-	-	-	-	-	-	-
Stage 2	950	848	-	1019	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.33	9.34	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	1084	833	1548	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.004	-	-	-
HCM Control Delay (s/veh)	0	-	-	8.3	9.3	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	3	0	0	0
Future Vol, veh/h	0	0	3	0	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	3	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	3	0	-	0	3	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1619	-	-	-	1019	1081
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1619	-	-	-	1019	1081
Mov Cap-2 Maneuver	-	-	-	-	1019	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	1	119	201	2
Future Vol, veh/h	0	0	1	119	201	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1	125	212	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	213	214	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	827	1355	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	827	1355	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0.07	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	30	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s/veh)	7.7	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

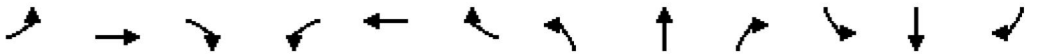
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	745	1119	50	2	2
Future Vol, veh/h	2	745	1119	50	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
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	2	784	1178	53	2	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1231	0	-	0	1601	615
Stage 1	-	-	-	-	1204	-
Stage 2	-	-	-	-	396	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	562	-	-	-	97	434
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	649	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	562	-	-	-	96	434
Mov Cap-2 Maneuver	-	-	-	-	96	-
Stage 1	-	-	-	-	246	-
Stage 2	-	-	-	-	649	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.03	0	28.46
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	562	-	-	-	158
HCM Lane V/C Ratio	0.004	-	-	-	0.027
HCM Control Delay (s/veh)	11.4	-	-	-	28.5
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	672	11	46	997	23	43	13	49	23	17	154
Future Volume (veh/h)	84	672	11	46	997	23	43	13	49	23	17	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	88	707	12	48	1049	24	45	14	52	24	18	162
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	163	1421	24	129	1344	31	126	115	427	99	590	645
Arrive On Green	0.09	0.40	0.40	0.07	0.38	0.38	0.07	0.33	0.33	0.06	0.32	0.32
Sat Flow, veh/h	1781	3576	61	1781	3551	81	1781	347	1291	1781	1870	1585
Grp Volume(v), veh/h	88	351	368	48	525	548	45	0	66	24	18	162
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1856	1781	0	1638	1781	1870	1585
Q Serve(g_s), s	3.3	10.3	10.3	1.8	18.1	18.1	1.7	0.0	1.9	0.9	0.5	0.6
Cycle Q Clear(g_c), s	3.3	10.3	10.3	1.8	18.1	18.1	1.7	0.0	1.9	0.9	0.5	0.6
Prop In Lane	1.00		0.03	1.00		0.04	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	163	706	739	129	672	702	126	0	542	99	590	645
V/C Ratio(X)	0.54	0.50	0.50	0.37	0.78	0.78	0.36	0.00	0.12	0.24	0.03	0.25
Avail Cap(c_a), veh/h	244	868	908	182	807	842	182	0	542	182	590	645
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	15.7	15.7	30.7	19.0	19.0	30.7	0.0	16.2	31.4	16.4	6.0
Incr Delay (d2), s/veh	2.8	0.5	0.5	1.8	4.1	4.0	1.7	0.0	0.5	1.3	0.1	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	1.4	3.5	3.7	0.8	6.9	7.2	0.8	0.0	0.8	0.4	0.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.9	16.3	16.2	32.5	23.2	23.0	32.5	0.0	16.7	32.6	16.5	6.9
LnGrp LOS	C	B	B	C	C	C	C		B	C	B	A
Approach Vol, veh/h		807			1121			111			204	
Approach Delay, s/veh		18.1			23.5			23.1			10.8	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	25.4	7.5	30.1	7.4	24.4	8.8	28.8
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	5.1	19.9	5.1	31.9	5.1	19.9	7.5	29.5
Max Q Clear Time (g_c+I1), s	2.9	3.9	3.8	12.3	3.7	2.6	5.3	20.1
Green Ext Time (p_c), s	0.0	0.2	0.0	3.7	0.0	0.5	0.0	4.2

Intersection Summary	
HCM 7th Control Delay, s/veh	20.4
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	3	0	0	3	0
Future Vol, veh/h	0	3	0	0	3	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	0	0	3	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	3	0	3	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1619	-	1020	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1619	-	1020	1083
Mov Cap-2 Maneuver	-	-	-	-	1020	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	8.54
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1020	-	-	1619	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s/veh)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1	1	0	0
Stage 1	1	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	895	1084	-	-
Stage 1	895	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1084	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	0	0	-
HCM Lane LOS	A	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	0	0	0	166	8	1	126	0
Future Vol, veh/h	0	0	0	5	0	0	0	166	8	1	126	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	93	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	0	0	0	5	0	0	0	175	8	1	133	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	222	318	133	314	314	92	133	0	0	183	0	0
Stage 1	135	135	-	179	179	-	-	-	-	-	-	-
Stage 2	87	183	-	135	135	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	724	598	916	627	601	948	1451	-	-	1391	-	-
Stage 1	868	784	-	806	751	-	-	-	-	-	-	-
Stage 2	911	748	-	868	784	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	724	597	916	627	601	948	1451	-	-	1391	-	-
Mov Cap-2 Maneuver	724	597	-	627	601	-	-	-	-	-	-	-
Stage 1	867	784	-	806	751	-	-	-	-	-	-	-
Stage 2	911	748	-	867	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	10.79	0	0.06
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1451	-	-	-	627	1391	-	-
HCM Lane V/C Ratio	-	-	-	-	0.008	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	0	10.8	7.6	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

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	0	0	1	0	0	0	14	8	0	0	2	0
Future Vol, veh/h	0	0	1	0	0	0	14	8	0	0	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	1	0	0	0	15	8	0	0	2	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	40	40	2	40	40	8	2	0	0	8	0	0
Stage 1	2	2	-	38	38	-	-	-	-	-	-	-
Stage 2	38	38	-	2	2	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	964	852	1082	964	852	1073	1620	-	-	1612	-	-
Stage 1	1021	894	-	977	863	-	-	-	-	-	-	-
Stage 2	977	863	-	1021	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	955	844	1082	954	844	1073	1620	-	-	1612	-	-
Mov Cap-2 Maneuver	955	844	-	954	844	-	-	-	-	-	-	-
Stage 1	1021	894	-	968	856	-	-	-	-	-	-	-
Stage 2	968	856	-	1020	894	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.33	0	4.61	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1145	-	-	1082	-	1612	-	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-	-	-	-
HCM Control Delay (s/veh)	7.2	0	-	8.3	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1	0	-	0	1	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	-	1022	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1622	-	-	-	1022	1084
Mov Cap-2 Maneuver	-	-	-	-	1022	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1	1	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	1083	1621	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1083	1621	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1621	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

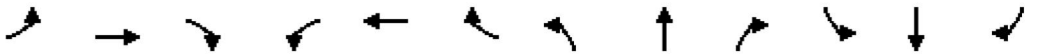
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	1133	719	1	1	2
Future Vol, veh/h	9	1133	719	1	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	1168	741	1	1	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	742	0	-	0	1344	371
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	603	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	861	-	-	-	143	626
Stage 1	-	-	-	-	432	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	861	-	-	-	141	626
Mov Cap-2 Maneuver	-	-	-	-	141	-
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	509	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.07	0	17.45
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	861	-	-	-	292
HCM Lane V/C Ratio	0.011	-	-	-	0.011
HCM Control Delay (s/veh)	9.2	-	-	-	17.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	957	45	22	603	11	14	7	24	10	13	106
Future Volume (veh/h)	135	957	45	22	603	11	14	7	24	10	13	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	139	987	46	23	622	11	14	7	25	10	13	109
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	1341	62	103	940	17	87	126	450	79	649	840
Arrive On Green	0.18	0.39	0.39	0.06	0.26	0.26	0.05	0.35	0.35	0.04	0.35	0.35
Sat Flow, veh/h	1781	3457	161	1781	3573	63	1781	359	1281	1781	1870	1585
Grp Volume(v), veh/h	139	507	526	23	309	324	14	0	32	10	13	109
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1859	1781	0	1640	1781	1870	1585
Q Serve(g_s), s	4.4	15.4	15.4	0.8	9.8	9.8	0.5	0.0	0.8	0.3	0.3	0.3
Cycle Q Clear(g_c), s	4.4	15.4	15.4	0.8	9.8	9.8	0.5	0.0	0.8	0.3	0.3	0.3
Prop In Lane	1.00		0.09	1.00		0.03	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	326	689	714	103	467	489	87	0	576	79	649	840
V/C Ratio(X)	0.43	0.74	0.74	0.22	0.66	0.66	0.16	0.00	0.06	0.13	0.02	0.13
Avail Cap(c_a), veh/h	384	943	977	212	771	807	200	0	576	200	649	840
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	16.6	16.6	28.4	20.8	20.8	28.8	0.0	13.5	29.0	13.6	2.6
Incr Delay (d2), s/veh	0.9	2.0	1.9	1.1	1.6	1.5	0.9	0.0	0.2	0.7	0.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	5.3	5.5	0.3	3.6	3.8	0.2	0.0	0.3	0.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.8	18.5	18.5	29.5	22.4	22.3	29.6	0.0	13.7	29.7	13.6	2.9
LnGrp LOS	C	B	B	C	C	C	C		B	C	B	A
Approach Vol, veh/h		1172			656			46			132	
Approach Delay, s/veh		19.1			22.6			18.6			6.0	
Approach LOS		B			C			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	24.7	6.2	27.0	5.6	24.4	14.0	19.1
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	5.1	19.9	5.5	31.5	5.1	19.9	11.6	25.4
Max Q Clear Time (g_c+I1), s	2.3	2.8	2.8	17.4	2.5	2.3	6.4	11.8
Green Ext Time (p_c), s	0.0	0.1	0.0	5.0	0.0	0.3	0.1	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.4
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	2	5	9	55	2
Future Vol, veh/h	1	2	5	9	55	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	5	9	58	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	3	0	22	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1619	-	994	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1003	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1619	-	991	1082
Mov Cap-2 Maneuver	-	-	-	-	991	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	999	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.58	8.85
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	643	-
HCM Lane V/C Ratio	0.06	-	-	0.003	-
HCM Control Delay (s/veh)	8.9	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	2	6	7	7	16
Future Vol, veh/h	0	2	6	7	7	16
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	6	7	7	17

Major/Minor	Minor2		Major2	
Conflicting Flow All	20	7	0	0
Stage 1	20	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	874	1075	-	-
Stage 1	879	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1075	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v	8.36	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	1075	-	-
HCM Lane V/C Ratio	0.002	-	-
HCM Control Delay (s/veh)	8.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	12	14	0	1	5	110	9	0	191	8
Future Vol, veh/h	5	0	12	14	0	1	5	110	9	0	191	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	5	0	13	15	0	1	5	116	9	0	201	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	274	341	205	332	341	63	209	0	0	125	0	0
Stage 1	205	205	-	131	131	-	-	-	-	-	-	-
Stage 2	68	136	-	201	209	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	668	580	835	609	581	989	1360	-	-	1460	-	-
Stage 1	796	731	-	859	787	-	-	-	-	-	-	-
Stage 2	934	784	-	800	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	664	578	835	598	578	989	1360	-	-	1460	-	-
Mov Cap-2 Maneuver	664	578	-	598	578	-	-	-	-	-	-	-
Stage 1	796	731	-	856	784	-	-	-	-	-	-	-
Stage 2	929	780	-	788	728	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.75	11.02	0.33	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	131	-	-	776	614	1460	-	-
HCM Lane V/C Ratio	0.004	-	-	0.023	0.026	-	-	-
HCM Control Delay (s/veh)	7.7	0	-	9.7	11	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	3	7	3	2	0	56	2	1	6	0
Future Vol, veh/h	0	0	3	7	3	2	0	56	2	1	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	3	7	3	2	0	59	2	1	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	69	69	6	68	68	60	6	0	0	61	0	0
Stage 1	8	8	-	60	60	-	-	-	-	-	-	-
Stage 2	61	61	-	8	8	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	923	821	1076	924	822	1005	1615	-	-	1542	-	-
Stage 1	1013	889	-	951	845	-	-	-	-	-	-	-
Stage 2	951	844	-	1013	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	917	821	1076	921	822	1005	1615	-	-	1542	-	-
Mov Cap-2 Maneuver	917	821	-	921	822	-	-	-	-	-	-	-
Stage 1	1012	888	-	951	845	-	-	-	-	-	-	-
Stage 2	945	844	-	1009	888	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.35	9.03	0	1.05
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1615	-	-	1076	906	257	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.014	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	8.4	9	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	3	5	14	9
Future Vol, veh/h	3	0	3	5	14	9
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	3	5	15	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	8	0	-	0	12	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1612	-	-	-	1007	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1017	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1612	-	-	-	1005	1077
Mov Cap-2 Maneuver	-	-	-	-	1005	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.24	0	8.57
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1612	-	-	-	1032
HCM Lane V/C Ratio	0.002	-	-	-	0.023
HCM Control Delay (s/veh)	7.2	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	6	123	213	2
Future Vol, veh/h	0	14	6	123	213	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	6	129	224	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	225	226	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	813	1341	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	813	1341	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.51	0.39	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	167	-	813	-	-
HCM Lane V/C Ratio	0.005	-	0.018	-	-
HCM Control Delay (s/veh)	7.7	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	749	1131	50	2	14
Future Vol, veh/h	6	749	1131	50	2	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	0	-	-	-	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	6	788	1191	53	2	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1243	0	-	0	1624	622
Stage 1	-	-	-	-	1217	-
Stage 2	-	-	-	-	407	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	556	-	-	-	93	430
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	556	-	-	-	92	430
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.09	0	17.94
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	556	-	-	-	295
HCM Lane V/C Ratio	0.011	-	-	-	0.057
HCM Control Delay (s/veh)	11.6	-	-	-	17.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	672	11	46	997	26	43	15	49	32	22	166
Future Volume (veh/h)	88	672	11	46	997	26	43	15	49	32	22	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	93	707	12	48	1049	27	45	16	52	34	23	175
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	169	1433	24	128	1339	34	125	124	403	113	587	647
Arrive On Green	0.09	0.40	0.40	0.07	0.38	0.38	0.07	0.32	0.32	0.06	0.31	0.31
Sat Flow, veh/h	1781	3576	61	1781	3540	91	1781	387	1257	1781	1870	1585
Grp Volume(v), veh/h	93	351	368	48	527	549	45	0	68	34	23	175
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1854	1781	0	1644	1781	1870	1585
Q Serve(g_s), s	3.5	10.3	10.3	1.8	18.3	18.3	1.7	0.0	2.0	1.3	0.6	0.7
Cycle Q Clear(g_c), s	3.5	10.3	10.3	1.8	18.3	18.3	1.7	0.0	2.0	1.3	0.6	0.7
Prop In Lane	1.00		0.03	1.00		0.05	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	169	712	745	128	672	701	125	0	527	113	587	647
V/C Ratio(X)	0.55	0.49	0.49	0.37	0.78	0.78	0.36	0.00	0.13	0.30	0.04	0.27
Avail Cap(c_a), veh/h	242	863	903	181	802	836	181	0	527	181	587	647
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	15.6	15.6	30.9	19.2	19.2	31.0	0.0	16.8	31.2	16.7	6.1
Incr Delay (d2), s/veh	2.8	0.5	0.5	1.8	4.3	4.1	1.7	0.0	0.5	1.5	0.1	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.5	3.7	0.8	7.0	7.3	0.8	0.0	0.8	0.6	0.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.0	16.2	16.1	32.7	23.5	23.3	32.7	0.0	17.3	32.7	16.8	7.1
LnGrp LOS	C	B	B	C	C	C	C		B	C	B	A
Approach Vol, veh/h		812			1124			113			232	
Approach Delay, s/veh		18.1			23.8			23.4			11.8	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	24.9	7.5	30.5	7.4	24.4	9.1	28.9
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	5.1	19.9	5.1	31.9	5.1	19.9	7.5	29.5
Max Q Clear Time (g_c+I1), s	3.3	4.0	3.8	12.3	3.7	2.7	5.5	20.3
Green Ext Time (p_c), s	0.0	0.2	0.0	3.7	0.0	0.6	0.0	4.1

Intersection Summary	
HCM 7th Control Delay, s/veh	20.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	5	3	2	5	4
Future Vol, veh/h	2	5	3	2	5	4
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	5	3	2	5	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	13	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1613	-	1006	1078
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1613	-	1004	1078
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1013	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	4.34	8.51
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1036	-	-	1080	-
HCM Lane V/C Ratio	0.009	-	-	0.002	-
HCM Control Delay (s/veh)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	7	15	0	5	11
Future Vol, veh/h	0	7	15	0	5	11
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	16	0	5	12

Major/Minor	Minor2		Major2	
Conflicting Flow All	32	0	0	0
Stage 1	32	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	861	-	-	-
Stage 1	869	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	-	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	8	5	0	0	11	166	8	1	126	4
Future Vol, veh/h	3	0	8	5	0	0	11	166	8	1	126	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	3	0	8	5	0	0	12	175	8	1	133	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	247	343	135	337	341	92	137	0	0	183	0	0
Stage 1	137	137	-	202	202	-	-	-	-	-	-	-
Stage 2	111	206	-	135	139	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	696	579	914	605	580	948	1446	-	-	1391	-	-
Stage 1	866	783	-	781	734	-	-	-	-	-	-	-
Stage 2	883	730	-	868	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	690	573	914	594	575	948	1446	-	-	1391	-	-
Mov Cap-2 Maneuver	690	573	-	594	575	-	-	-	-	-	-	-
Stage 1	865	782	-	775	727	-	-	-	-	-	-	-
Stage 2	876	724	-	859	781	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.35	11.12	0.5	0.06
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	201	-	-	839	594	1391	-	-
HCM Lane V/C Ratio	0.008	-	-	0.014	0.009	0.001	-	-
HCM Control Delay (s/veh)	7.5	0.1	-	9.3	11.1	7.6	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	1	5	0	2	14	12	7	2	5	0
Future Vol, veh/h	0	0	1	5	0	2	14	12	7	2	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	1	5	0	2	15	13	7	2	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	52	59	5	55	55	16	5	0	0	20	0	0
Stage 1	9	9	-	46	46	-	-	-	-	-	-	-
Stage 2	42	49	-	9	9	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	948	832	1078	942	836	1063	1616	-	-	1596	-	-
Stage 1	1012	888	-	968	857	-	-	-	-	-	-	-
Stage 2	972	854	-	1012	888	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	936	823	1078	932	827	1063	1616	-	-	1596	-	-
Mov Cap-2 Maneuver	936	823	-	932	827	-	-	-	-	-	-	-
Stage 1	1010	887	-	959	849	-	-	-	-	-	-	-
Stage 2	961	846	-	1009	887	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.34	8.76	3.08	2.07
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	711	-	-	1078	966	514	-	-
HCM Lane V/C Ratio	0.009	-	-	0.001	0.008	0.001	-	-
HCM Control Delay (s/veh)	7.2	0	-	8.3	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	0	0	13	9	6
Future Vol, veh/h	9	0	0	13	9	6
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	0	14	9	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	14	0	-	0	26	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	19	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1605	-	-	-	990	1076
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1004	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1605	-	-	-	984	1076
Mov Cap-2 Maneuver	-	-	-	-	984	-
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	1004	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.26	0	8.59
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1605	-	-	-	1019
HCM Lane V/C Ratio	0.006	-	-	-	0.016
HCM Control Delay (s/veh)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	13	11	8	0
Future Vol, veh/h	0	9	13	11	8	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	14	12	8	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	8	8	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	1073	1611	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1073	1611	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.38	3.94	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1606	-	1073	-	-
HCM Lane V/C Ratio	0.008	-	0.009	-	-
HCM Control Delay (s/veh)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

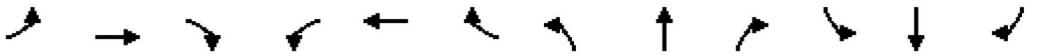
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1144	727	1	1	10
Future Vol, veh/h	20	1144	727	1	1	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	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	1179	749	1	1	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	751	0	-	0	1381	375
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	855	-	-	-	135	622
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	492	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	855	-	-	-	132	622
Mov Cap-2 Maneuver	-	-	-	-	132	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	492	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.16	0	12.93
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	855	-	-	-	465
HCM Lane V/C Ratio	0.024	-	-	-	0.024
HCM Control Delay (s/veh)	9.3	-	-	-	12.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	957	45	22	603	20	14	11	24	16	16	114
Future Volume (veh/h)	146	957	45	22	603	20	14	11	24	16	16	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	151	987	46	23	622	21	14	11	25	16	16	118
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	1340	62	103	934	31	87	176	399	91	651	836
Arrive On Green	0.18	0.39	0.39	0.06	0.27	0.27	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	3457	161	1781	3508	118	1781	508	1155	1781	1870	1585
Grp Volume(v), veh/h	151	507	526	23	315	328	14	0	36	16	16	118
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1849	1781	0	1663	1781	1870	1585
Q Serve(g_s), s	4.8	15.5	15.5	0.8	10.0	10.0	0.5	0.0	0.9	0.5	0.4	0.3
Cycle Q Clear(g_c), s	4.8	15.5	15.5	0.8	10.0	10.0	0.5	0.0	0.9	0.5	0.4	0.3
Prop In Lane	1.00		0.09	1.00		0.06	1.00		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	319	688	713	103	473	492	87	0	575	91	651	836
V/C Ratio(X)	0.47	0.74	0.74	0.22	0.67	0.67	0.16	0.00	0.06	0.18	0.02	0.14
Avail Cap(c_a), veh/h	383	940	974	211	769	800	200	0	575	200	651	836
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	16.6	16.6	28.5	20.7	20.7	28.9	0.0	13.9	28.8	13.6	2.7
Incr Delay (d2), s/veh	1.1	2.0	1.9	1.1	1.6	1.6	0.9	0.0	0.2	0.9	0.1	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.3	5.5	0.3	3.7	3.8	0.2	0.0	0.4	0.2	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.4	18.6	18.6	29.6	22.3	22.3	29.7	0.0	14.1	29.7	13.6	3.0
LnGrp LOS	C	B	B	C	C	C	C		B	C	B	A
Approach Vol, veh/h		1184			666			50			150	
Approach Delay, s/veh		19.3			22.6			18.4			7.0	
Approach LOS		B			C			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	24.4	6.2	27.0	5.6	24.5	13.8	19.4
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	5.1	19.9	5.5	31.5	5.1	19.9	11.6	25.4
Max Q Clear Time (g_c+I1), s	2.5	2.9	2.8	17.5	2.5	2.4	6.8	12.0
Green Ext Time (p_c), s	0.0	0.1	0.0	5.0	0.0	0.3	0.1	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.5
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	7.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	1	0	8	53	0
Future Vol, veh/h	1	1	0	8	53	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	0	8	56	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2	0	10	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1620	-	1010	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1620	-	1010	1083
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1015	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	8.77
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1620	-
HCM Lane V/C Ratio	0.055	-	-	-	-
HCM Control Delay (s/veh)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	8	0	0
Future Vol, veh/h	1	0	0	8	0	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	0	8	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	8	8	0	0
Stage 1	8	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	887	1073	-	-
Stage 1	889	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1073	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	23	0	31	4	210	14	22	281	9
Future Vol, veh/h	1	0	1	23	0	31	4	210	14	22	281	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	1	0	1	24	0	33	4	221	15	23	296	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	466	591	301	579	588	118	305	0	0	236	0	0
Stage 1	347	347	-	237	237	-	-	-	-	-	-	-
Stage 2	119	244	-	342	352	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	493	419	738	412	420	912	1254	-	-	1330	-	-
Stage 1	668	634	-	746	708	-	-	-	-	-	-	-
Stage 2	873	703	-	672	631	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	466	410	738	403	411	912	1254	-	-	1330	-	-
Mov Cap-2 Maneuver	466	410	-	403	411	-	-	-	-	-	-	-
Stage 1	657	623	-	743	706	-	-	-	-	-	-	-
Stage 2	839	701	-	660	620	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.33	11.71	0.16	0.55
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	58	-	-	571	593	1330	-	-
HCM Lane V/C Ratio	0.003	-	-	0.004	0.096	0.017	-	-
HCM Control Delay (s/veh)	7.9	0	-	11.3	11.7	7.8	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	4	0	3	0	1	54	0	0	1	0
Future Vol, veh/h	0	0	4	0	3	0	1	54	0	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	4	0	3	0	1	57	0	0	1	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	62	60	1	60	60	57	1	0	0	57	0	0
Stage 1	1	1	-	59	59	-	-	-	-	-	-	-
Stage 2	61	59	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	934	831	1084	936	831	1009	1622	-	-	1548	-	-
Stage 1	1022	895	-	953	846	-	-	-	-	-	-	-
Stage 2	951	846	-	1022	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	929	830	1084	931	830	1009	1622	-	-	1548	-	-
Mov Cap-2 Maneuver	929	830	-	931	830	-	-	-	-	-	-	-
Stage 1	1022	895	-	952	845	-	-	-	-	-	-	-
Stage 2	947	845	-	1018	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.34	9.35	0.13	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	33	-	-	1084	830	1548	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.004	-	-	-
HCM Control Delay (s/veh)	7.2	0	-	8.3	9.4	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	3	1	1	0
Future Vol, veh/h	0	0	3	1	1	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	3	1	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	4	0	-	0	4	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1617	-	-	-	1018	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1617	-	-	-	1018	1080
Mov Cap-2 Maneuver	-	-	-	-	1018	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.54
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1617	-	-	-	1018
HCM Lane V/C Ratio	-	-	-	-	0.001
HCM Control Delay (s/veh)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	2	235	300	2
Future Vol, veh/h	0	1	2	235	300	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	2	247	316	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	317	318	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	723	1241	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	723	1241	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.99	0.08	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	30	-	723	-	-
HCM Lane V/C Ratio	0.002	-	0.001	-	-
HCM Control Delay (s/veh)	7.9	0	10	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

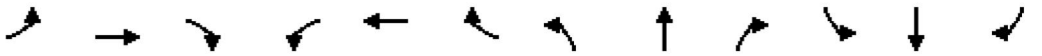
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	919	1341	51	3	7
Future Vol, veh/h	6	919	1341	51	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
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	6	967	1412	54	3	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1465	0	-	0	1935	733
Stage 1	-	-	-	-	1438	-
Stage 2	-	-	-	-	496	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	457	-	-	-	58	363
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	457	-	-	-	57	363
Mov Cap-2 Maneuver	-	-	-	-	57	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	577	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.08	0	33.03
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	457	-	-	-	139
HCM Lane V/C Ratio	0.014	-	-	-	0.076
HCM Control Delay (s/veh)	13	-	-	-	33
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	763	17	53	1187	49	50	27	61	37	22	193
Future Volume (veh/h)	179	763	17	53	1187	49	50	27	61	37	22	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	188	803	18	56	1249	52	53	28	64	39	23	203
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	239	1619	36	126	1363	57	123	144	329	111	518	652
Arrive On Green	0.13	0.46	0.46	0.07	0.39	0.39	0.07	0.28	0.28	0.06	0.28	0.28
Sat Flow, veh/h	1781	3553	80	1781	3477	145	1781	506	1156	1781	1870	1585
Grp Volume(v), veh/h	188	402	419	56	638	663	53	0	92	39	23	203
Grp Sat Flow(s),veh/h/ln	1781	1777	1856	1781	1777	1844	1781	0	1662	1781	1870	1585
Q Serve(g_s), s	8.0	12.4	12.5	2.4	26.7	26.7	2.2	0.0	3.3	1.6	0.7	0.9
Cycle Q Clear(g_c), s	8.0	12.4	12.5	2.4	26.7	26.7	2.2	0.0	3.3	1.6	0.7	0.9
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	239	809	845	126	696	723	123	0	472	111	518	652
V/C Ratio(X)	0.79	0.50	0.50	0.45	0.92	0.92	0.43	0.00	0.19	0.35	0.04	0.31
Avail Cap(c_a), veh/h	239	809	845	161	696	723	161	0	472	161	518	652
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	15.0	15.0	34.9	22.6	22.6	35.0	0.0	21.2	35.2	20.7	7.4
Incr Delay (d2), s/veh	15.9	0.5	0.5	2.5	16.9	16.6	2.4	0.0	0.9	1.9	0.2	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	4.2	4.3	4.5	1.0	12.7	13.1	1.0	0.0	1.4	0.7	0.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.8	15.5	15.5	37.4	39.5	39.2	37.3	0.0	22.2	37.1	20.9	8.6
LnGrp LOS	D	B	B	D	D	D	D		C	D	C	A
Approach Vol, veh/h		1009			1357			145			265	
Approach Delay, s/veh		21.7			39.3			27.7			13.9	
Approach LOS		C			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	24.8	8.0	38.2	7.9	24.2	13.0	33.2
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	5.1	19.7	5.1	32.1	5.1	19.7	8.5	28.7
Max Q Clear Time (g_c+I1), s	3.6	5.3	4.4	14.5	4.2	2.9	10.0	28.7
Green Ext Time (p_c), s	0.0	0.3	0.0	4.2	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	29.8
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	3	0	2	3	0
Future Vol, veh/h	2	3	0	2	3	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	0	2	3	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	5	0	6	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1616	-	1016	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1616	-	1016	1080
Mov Cap-2 Maneuver	-	-	-	-	1016	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	8.56
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1016	-	-	1616	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s/veh)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	2	0	0
Future Vol, veh/h	2	0	0	2	0	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	0	2	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	2	2	0	0
Stage 1	2	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	894	1082	-	-
Stage 1	894	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1082	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	2	14	0	41	6	295	14	43	269	5
Future Vol, veh/h	1	0	2	14	0	41	6	295	14	43	269	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	1	0	2	15	0	43	6	311	15	45	283	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	544	714	286	704	709	163	288	0	0	325	0	0
Stage 1	376	376	-	331	331	-	-	-	-	-	-	-
Stage 2	168	338	-	374	379	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	436	356	752	337	358	854	1272	-	-	1233	-	-
Stage 1	644	615	-	657	645	-	-	-	-	-	-	-
Stage 2	818	640	-	646	614	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	396	341	752	322	343	854	1272	-	-	1233	-	-
Mov Cap-2 Maneuver	396	341	-	322	343	-	-	-	-	-	-	-
Stage 1	621	593	-	654	641	-	-	-	-	-	-	-
Stage 2	772	636	-	621	591	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.25	11.62	0.19	1.09
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	64	-	-	579	601	1233	-	-
HCM Lane V/C Ratio	0.005	-	-	0.005	0.096	0.037	-	-
HCM Control Delay (s/veh)	7.8	0	-	11.3	11.6	8	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	-	-

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	0	0	3	0	0	0	16	8	0	0	2	0
Future Vol, veh/h	0	0	3	0	0	0	16	8	0	0	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	3	0	0	0	17	8	0	0	2	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	44	44	2	44	44	8	2	0	0	8	0	0
Stage 1	2	2	-	42	42	-	-	-	-	-	-	-
Stage 2	42	42	-	2	2	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	958	848	1082	958	848	1073	1620	-	-	1612	-	-
Stage 1	1021	894	-	972	860	-	-	-	-	-	-	-
Stage 2	972	860	-	1021	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	948	839	1082	945	839	1073	1620	-	-	1612	-	-
Mov Cap-2 Maneuver	948	839	-	945	839	-	-	-	-	-	-	-
Stage 1	1021	894	-	962	851	-	-	-	-	-	-	-
Stage 2	962	851	-	1018	894	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.34	0	4.83	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1200	-	-	1082	-	1612	-	-
HCM Lane V/C Ratio	0.01	-	-	0.003	-	-	-	-
HCM Control Delay (s/veh)	7.2	0	-	8.3	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	2	2	0
Future Vol, veh/h	0	0	0	2	2	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	2	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2	0	-	0	1	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	1022	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1620	-	-	-	1022	1084
Mov Cap-2 Maneuver	-	-	-	-	1022	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.53
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1022
HCM Lane V/C Ratio	-	-	-	-	0.002
HCM Control Delay (s/veh)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	2	166	154	0
Future Vol, veh/h	0	2	2	166	154	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	2	175	162	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	162	162	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	882	1415	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	882	1415	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.09	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	43	-	882	-	-
HCM Lane V/C Ratio	0.001	-	0.002	-	-
HCM Control Delay (s/veh)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

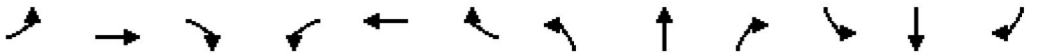
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1462	1008	3	3	7
Future Vol, veh/h	14	1462	1008	3	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1507	1039	3	3	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1042	0	-	0	1823	521
Stage 1	-	-	-	-	1041	-
Stage 2	-	-	-	-	782	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	663	-	-	-	69	500
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	411	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	663	-	-	-	67	500
Mov Cap-2 Maneuver	-	-	-	-	67	-
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	411	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.1	0	27.49
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	663	-	-	-	170
HCM Lane V/C Ratio	0.022	-	-	-	0.061
HCM Control Delay (s/veh)	10.6	-	-	-	27.5
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	1131	52	47	871	53	21	13	47	33	26	142
Future Volume (veh/h)	304	1131	52	47	871	53	21	13	47	33	26	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	313	1166	54	48	898	55	22	13	48	34	27	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	1576	73	121	1035	63	90	100	369	106	553	816
Arrive On Green	0.22	0.46	0.46	0.07	0.30	0.30	0.05	0.29	0.29	0.06	0.30	0.30
Sat Flow, veh/h	1781	3458	160	1781	3401	208	1781	349	1289	1781	1870	1585
Grp Volume(v), veh/h	313	599	621	48	469	484	22	0	61	34	27	146
Grp Sat Flow(s),veh/h/ln	1781	1777	1842	1781	1777	1833	1781	0	1638	1781	1870	1585
Q Serve(g_s), s	12.8	21.2	21.3	2.0	19.2	19.2	0.9	0.0	2.1	1.4	0.8	0.4
Cycle Q Clear(g_c), s	12.8	21.2	21.3	2.0	19.2	19.2	0.9	0.0	2.1	1.4	0.8	0.4
Prop In Lane	1.00		0.09	1.00		0.11	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	391	810	839	121	541	558	90	0	469	106	553	816
V/C Ratio(X)	0.80	0.74	0.74	0.40	0.87	0.87	0.24	0.00	0.13	0.32	0.05	0.18
Avail Cap(c_a), veh/h	406	810	839	162	544	561	162	0	469	162	553	816
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	17.1	17.2	34.3	25.2	25.2	35.0	0.0	20.3	34.6	19.3	4.2
Incr Delay (d2), s/veh	10.6	3.6	3.5	2.1	13.9	13.5	1.4	0.0	0.6	1.7	0.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	7.9	8.1	0.9	9.1	9.4	0.4	0.0	0.9	0.6	0.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.0	20.8	20.7	36.4	39.1	38.8	36.4	0.0	20.9	36.3	19.5	4.7
LnGrp LOS	D	C	C	D	D	D	D		C	D	B	A
Approach Vol, veh/h		1533			1001			83			207	
Approach Delay, s/veh		24.5			38.8			25.0			11.8	
Approach LOS		C			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	24.5	7.7	37.5	6.4	25.2	19.3	25.9
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	5.0	20.0	5.0	32.0	5.0	20.0	15.5	21.5
Max Q Clear Time (g_c+I1), s	3.4	4.1	4.0	23.3	2.9	2.8	14.8	21.2
Green Ext Time (p_c), s	0.0	0.2	0.0	4.5	0.0	0.5	0.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	28.6
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	2	5	10	55	2
Future Vol, veh/h	2	2	5	10	55	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	2	5	11	58	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	4	0	24	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1617	-	992	1081
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1002	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1617	-	988	1081
Mov Cap-2 Maneuver	-	-	-	-	988	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	998	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.41	8.86
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	991	-	-	600	-
HCM Lane V/C Ratio	0.061	-	-	0.003	-
HCM Control Delay (s/veh)	8.9	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	2	6	8	7	16
Future Vol, veh/h	1	2	6	8	7	16
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	6	8	7	17

Major/Minor	Minor2		Major2	
Conflicting Flow All	21	8	0	0
Stage 1	21	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	873	1073	-	-
Stage 1	878	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1073	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v	8.36	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	1073	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s/veh)	8.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	13	23	0	31	8	210	14	22	281	11
Future Vol, veh/h	6	0	13	23	0	31	8	210	14	22	281	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	6	0	14	24	0	33	8	221	15	23	296	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	475	601	302	587	599	118	307	0	0	236	0	0
Stage 1	348	348	-	245	245	-	-	-	-	-	-	-
Stage 2	127	253	-	342	354	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	486	414	737	407	414	912	1252	-	-	1330	-	-
Stage 1	667	633	-	737	703	-	-	-	-	-	-	-
Stage 2	864	697	-	672	630	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	457	403	737	389	404	912	1252	-	-	1330	-	-
Mov Cap-2 Maneuver	457	403	-	389	404	-	-	-	-	-	-	-
Stage 1	656	622	-	732	697	-	-	-	-	-	-	-
Stage 2	827	692	-	648	619	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.02	11.88	0.32	0.54
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	114	-	-	618	580	1330	-	-
HCM Lane V/C Ratio	0.007	-	-	0.032	0.098	0.017	-	-
HCM Control Delay (s/veh)	7.9	0.1	-	11	11.9	7.8	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	4	7	3	2	1	56	2	1	6	0
Future Vol, veh/h	0	0	4	7	3	2	1	56	2	1	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	4	7	3	2	1	59	2	1	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	71	72	6	71	71	60	6	0	0	61	0	0
Stage 1	8	8	-	62	62	-	-	-	-	-	-	-
Stage 2	63	63	-	8	8	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	920	819	1076	921	820	1005	1615	-	-	1542	-	-
Stage 1	1013	889	-	949	843	-	-	-	-	-	-	-
Stage 2	948	842	-	1013	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	914	818	1076	916	819	1005	1615	-	-	1542	-	-
Mov Cap-2 Maneuver	914	818	-	916	819	-	-	-	-	-	-	-
Stage 1	1012	888	-	948	843	-	-	-	-	-	-	-
Stage 2	942	842	-	1008	888	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.36	9.04	0.12	1.05
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	30	-	-	1076	903	257	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.014	0.001	-	-
HCM Control Delay (s/veh)	7.2	0	-	8.4	9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	3	6	15	9
Future Vol, veh/h	3	0	3	6	15	9
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	3	6	16	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	9	0	-	0	13	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1610	-	-	-	1007	1076
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1017	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1610	-	-	-	1005	1076
Mov Cap-2 Maneuver	-	-	-	-	1005	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.24	0	8.58
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1610	-	-	-	1030
HCM Lane V/C Ratio	0.002	-	-	-	0.025
HCM Control Delay (s/veh)	7.2	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	7	239	312	2
Future Vol, veh/h	0	15	7	239	312	2
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	7	252	328	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	329	331	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	711	1227	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	711	1227	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.18	0.27	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	102	-	711	-	-
HCM Lane V/C Ratio	0.006	-	0.022	-	-
HCM Control Delay (s/veh)	8	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

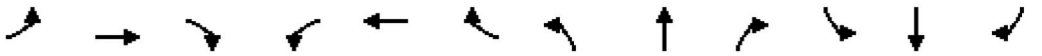
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	923	1353	51	3	19
Future Vol, veh/h	10	923	1353	51	3	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
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	11	972	1424	54	3	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1478	0	-	0	1958	739
Stage 1	-	-	-	-	1451	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	452	-	-	-	56	360
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	452	-	-	-	54	360
Mov Cap-2 Maneuver	-	-	-	-	54	-
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	570	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.14	0	24.93
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	452	-	-	-	204
HCM Lane V/C Ratio	0.023	-	-	-	0.114
HCM Control Delay (s/veh)	13.2	-	-	-	24.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	763	17	53	1187	52	50	29	61	46	27	205
Future Volume (veh/h)	183	763	17	53	1187	52	50	29	61	46	27	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	193	803	18	56	1249	55	53	31	64	48	28	216
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	239	1619	36	126	1359	60	123	152	314	119	518	652
Arrive On Green	0.13	0.46	0.46	0.07	0.39	0.39	0.07	0.28	0.28	0.07	0.28	0.28
Sat Flow, veh/h	1781	3553	80	1781	3467	153	1781	544	1124	1781	1870	1585
Grp Volume(v), veh/h	193	402	419	56	640	664	53	0	95	48	28	216
Grp Sat Flow(s),veh/h/ln	1781	1777	1856	1781	1777	1843	1781	0	1668	1781	1870	1585
Q Serve(g_s), s	8.2	12.4	12.5	2.4	26.8	26.9	2.2	0.0	3.4	2.0	0.9	0.9
Cycle Q Clear(g_c), s	8.2	12.4	12.5	2.4	26.8	26.9	2.2	0.0	3.4	2.0	0.9	0.9
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	239	809	845	126	696	722	123	0	466	119	518	652
V/C Ratio(X)	0.81	0.50	0.50	0.45	0.92	0.92	0.43	0.00	0.20	0.40	0.05	0.33
Avail Cap(c_a), veh/h	239	809	845	161	696	722	161	0	466	161	518	652
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	15.0	15.0	34.9	22.6	22.6	35.0	0.0	21.6	35.0	20.8	7.5
Incr Delay (d2), s/veh	18.3	0.5	0.5	2.5	17.2	17.0	2.4	0.0	1.0	2.2	0.2	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	4.5	4.3	4.5	1.0	12.8	13.2	1.0	0.0	1.4	0.9	0.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.3	15.5	15.5	37.4	39.9	39.6	37.3	0.0	22.6	37.2	21.0	8.8
LnGrp LOS	D	B	B	D	D	D	D		C	D	C	A
Approach Vol, veh/h		1014			1360			148			292	
Approach Delay, s/veh		22.3			39.6			27.8			14.7	
Approach LOS		C			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	24.4	8.0	38.2	7.9	24.2	13.0	33.2
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	5.1	19.7	5.1	32.1	5.1	19.7	8.5	28.7
Max Q Clear Time (g_c+I1), s	4.0	5.4	4.4	14.5	4.2	2.9	10.2	28.9
Green Ext Time (p_c), s	0.0	0.4	0.0	4.2	0.0	0.7	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	30.2
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	5	3	4	5	4
Future Vol, veh/h	4	5	3	4	5	4
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	3	4	5	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	9	0	17	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1610	-	1001	1076
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1012	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1610	-	999	1076
Mov Cap-2 Maneuver	-	-	-	-	999	-
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1010	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	3.1	8.52
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1031	-	-	771	-
HCM Lane V/C Ratio	0.009	-	-	0.002	-
HCM Control Delay (s/veh)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	7	15	2	5	11
Future Vol, veh/h	2	7	15	2	5	11
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	7	16	2	5	12

Major/Minor	Minor2		Major2	
Conflicting Flow All	34	2	0	0
Stage 1	34	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.22	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	859	1082	-	-
Stage 1	867	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1082	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s/v	8.36	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	1082	-	-
HCM Lane V/C Ratio	0.009	-	-
HCM Control Delay (s/veh)	8.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	10	14	0	41	17	295	14	43	269	9
Future Vol, veh/h	4	0	10	14	0	41	17	295	14	43	269	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	4	0	11	15	0	43	18	311	15	45	283	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	569	739	288	727	737	163	293	0	0	325	0	0
Stage 1	378	378	-	354	354	-	-	-	-	-	-	-
Stage 2	191	361	-	374	383	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	418	344	750	325	345	854	1267	-	-	1233	-	-
Stage 1	643	614	-	637	630	-	-	-	-	-	-	-
Stage 2	793	625	-	646	611	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	377	326	750	304	327	854	1267	-	-	1233	-	-
Mov Cap-2 Maneuver	377	326	-	304	327	-	-	-	-	-	-	-
Stage 1	619	592	-	627	620	-	-	-	-	-	-	-
Stage 2	741	615	-	614	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.32	11.83	0.51	1.08
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	177	-	-	585	585	1233	-	-
HCM Lane V/C Ratio	0.014	-	-	0.025	0.099	0.037	-	-
HCM Control Delay (s/veh)	7.9	0.1	-	11.3	11.8	8	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	3	5	0	2	16	12	7	2	5	0
Future Vol, veh/h	0	0	3	5	0	2	16	12	7	2	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	3	5	0	2	17	13	7	2	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	56	63	5	59	59	16	5	0	0	20	0	0
Stage 1	9	9	-	50	50	-	-	-	-	-	-	-
Stage 2	46	54	-	9	9	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	942	828	1078	936	831	1063	1616	-	-	1596	-	-
Stage 1	1012	888	-	963	853	-	-	-	-	-	-	-
Stage 2	967	850	-	1012	888	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	929	818	1078	923	822	1063	1616	-	-	1596	-	-
Mov Cap-2 Maneuver	929	818	-	923	822	-	-	-	-	-	-	-
Stage 1	1010	887	-	953	844	-	-	-	-	-	-	-
Stage 2	955	841	-	1007	887	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.35	8.78	3.31	2.07
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	766	-	-	1078	959	514	-	-
HCM Lane V/C Ratio	0.01	-	-	0.003	0.008	0.001	-	-
HCM Control Delay (s/veh)	7.3	0	-	8.4	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	0	0	15	11	6
Future Vol, veh/h	9	0	0	15	11	6
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	0	16	12	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	16	0	-	0	27	8
Stage 1	-	-	-	-	8	-
Stage 2	-	-	-	-	19	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1602	-	-	-	988	1074
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1004	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1602	-	-	-	982	1074
Mov Cap-2 Maneuver	-	-	-	-	982	-
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	1004	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.26	0	8.62
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1602	-	-	-	1013
HCM Lane V/C Ratio	0.006	-	-	-	0.018
HCM Control Delay (s/veh)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	11	15	177	162	0
Future Vol, veh/h	0	11	15	177	162	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	16	186	171	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	171	171	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	873	1405	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	873	1405	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.18	0.66	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	281	-	873	-	-
HCM Lane V/C Ratio	0.011	-	0.013	-	-
HCM Control Delay (s/veh)	7.6	0.1	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

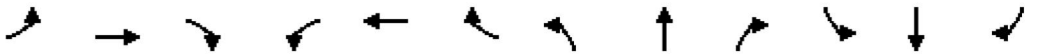
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	1473	1016	3	3	15
Future Vol, veh/h	25	1473	1016	3	3	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	1519	1047	3	3	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1051	0	-	0	1860	525
Stage 1	-	-	-	-	1049	-
Stage 2	-	-	-	-	811	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	658	-	-	-	65	497
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	398	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	658	-	-	-	62	497
Mov Cap-2 Maneuver	-	-	-	-	62	-
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	398	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.18	0	22.04
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	658	-	-	-	230
HCM Lane V/C Ratio	0.039	-	-	-	0.081
HCM Control Delay (s/veh)	10.7	-	-	-	22
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	1131	52	47	871	62	21	17	47	39	29	150
Future Volume (veh/h)	315	1131	52	47	871	62	21	17	47	39	29	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	325	1166	54	48	898	64	22	18	48	40	30	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1587	73	120	1015	72	89	127	340	112	553	824
Arrive On Green	0.22	0.46	0.46	0.07	0.30	0.30	0.05	0.28	0.28	0.06	0.30	0.30
Sat Flow, veh/h	1781	3458	160	1781	3364	240	1781	451	1203	1781	1870	1585
Grp Volume(v), veh/h	325	599	621	48	474	488	22	0	66	40	30	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1842	1781	1777	1827	1781	0	1654	1781	1870	1585
Q Serve(g_s), s	13.5	21.4	21.4	2.0	19.8	19.8	0.9	0.0	2.3	1.7	0.9	0.5
Cycle Q Clear(g_c), s	13.5	21.4	21.4	2.0	19.8	19.8	0.9	0.0	2.3	1.7	0.9	0.5
Prop In Lane	1.00		0.09	1.00		0.13	1.00		0.73	1.00		1.00
Lane Grp Cap(c), veh/h	400	816	845	120	536	551	89	0	467	112	553	824
V/C Ratio(X)	0.81	0.73	0.73	0.40	0.88	0.88	0.25	0.00	0.14	0.36	0.05	0.19
Avail Cap(c_a), veh/h	400	816	845	160	536	551	160	0	467	160	553	824
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	17.2	17.2	34.8	25.9	25.9	35.6	0.0	20.9	35.0	19.6	4.2
Incr Delay (d2), s/veh	12.1	3.5	3.4	2.2	16.1	15.7	1.4	0.0	0.6	1.9	0.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	7.9	8.2	0.9	9.7	9.9	0.4	0.0	0.9	0.7	0.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	20.6	20.6	37.0	41.9	41.6	37.0	0.0	21.5	36.9	19.8	4.7
LnGrp LOS	D	C	C	D	D	D	D		C	D	B	A
Approach Vol, veh/h		1545			1010			88			225	
Approach Delay, s/veh		24.8			41.5			25.4			12.5	
Approach LOS		C			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	24.5	7.7	38.2	6.4	25.5	20.0	26.0
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	5.0	20.0	5.0	32.0	5.0	20.0	15.5	21.5
Max Q Clear Time (g_c+I1), s	3.7	4.3	4.0	23.4	2.9	2.9	15.5	21.8
Green Ext Time (p_c), s	0.0	0.2	0.0	4.5	0.0	0.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	29.8
HCM 7th LOS	C